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THE PRESIDENTIAL ADDRESS ON THE INTER-DEPENDENCE OF SCIENCE AND THE HEALING ART.

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AFTER a few words of introduction, the PRESIDENT said :—

I propose on the present occasion to bring before you some illustrations of the inter-dependence of science and the healing art; and the first that I will take is perhaps the most astonishing of all results of purely physical inquiry,

The Discovery of the Röntgen Rays,

so called after the man who first clearly revealed them to the world. Mysterious as they still are, there is one of their properties which we can all appreciate—their power of passing through substances opaque to ordinary light. There seems to be no relation whatever between transparency in the common sense of the term and penetrability to these emanations. The glasses of a pair of spectacles may arrest them, while their wooden and leather cases allows them to pass almost unchecked. Yet they produce, whether directly or indirectly, the same effects as light upon a photographic plate. As a general rule, the denser any object is, the greater obstacle does it oppose to the rays. Hence, as bone is denser than flesh, if the hand or other part of the body is placed above the sensitive film inclosed in a case of wood or other light material at a suitable distance from the source of the rays, while they pass with the utmost facility through the uncovered parts of the lid of the box, and powerfully affect the plate beneath, they are arrested to a large extent by the bones, so that the plate is little acted upon in the parts opposite to them, while the portions corresponding to the muscles and other soft parts are influenced in an intermediate degree. Thus a picture is obtained in which the bones stand out in sharp relief among the flesh, and anything abnormal in their shape or position is clearly displayed. I need hardly point out what important aid this must give to the surgeon. As an instance, I may mention a case which occurred in the practice of Mr. Howard Marsh. He was called to see a severe injury of

the elbow, in which the swelling was so great as to make it impossible for him by ordinary means of examination to decide whether he had to deal with a fracture or a dislocation. If it were the latter, a cure would be effected by the exercise of violence, which would be not only useless, but most injurious if a bone was broken. By the aid of the Röntgen rays a photograph was taken, in which the bone of the upper arm was clearly seen displaced forward on those of the forearm. The diagnosis being thus established, Mr. Marsh proceeded to reduce the dislocation; and his success was proved by another photograph, which showed the bones in their natural relative position. The common metals, such as lead, iron, and copper, being still denser than the osseous structures, these rays can show a bullet imbedded in a bone, or a needle lodged about a joint. At the recent conversazione of the Royal Society a picture produced by the new photography displayed with perfect distinctness, through the bony framework of the chest, a halfpenny low down in a boy's gullet. It had been there for six months, causing uneasiness at the pit of the stomach during swallowing; but whether the coin really remained impacted, or if so, what was its position, was entirely uncertain till the Röntgen rays revealed it. Dr. Macintyre, of Glasgow, who was the photographer, informs me that when the presence of the halfpenny had been thus demonstrated, the surgeon in charge of the case made at attempt to extract it, and although this was not successful in its immediate object, it had the effect of dislodging the coin; for a subsequent photograph by Dr. Macintyre not only showed that it had disappeared from the gullet, but also, thanks to the wonderful penetrating power which the rays had acquired in his hands, proved that it had not lodged further down in the alimentary passage. The boy has since completely recovered. The Röntgen rays cause certain chemical compounds to fluoresce, and emit a faint light plainly visible in the dark; and if they are made to fall upon a translucent screen impregnated with such a salt, it becomes beautifully illuminated. If a part of the human body is interposed between the screen and the source of the rays, the bones and other structures are thrown in shadow upon it, and thus a diagnosis can be made without the delay involved in taking a photograph. It was, in fact, in this way that Dr. Macintyre first detected the coin in the boy's gullet. Mr. Herbert Jackson, of King's College, London, early distinguished himself in this branch of the subject. There is no reason to suppose that the limits of the capabilities of the rays in this way have yet been reached, By virtue of the greater density of the heart than the adjacent lungs with their contained air, the form and dimensions of that organ in the living body may be displayed on the fluorescent screen, and even its movements have been lately seen by several different observers. Such important applications of the new rays to medical practice have strongly attracted the interest of the public to them, and I venture to think that they have even served to stimulate the investigations of physicists. The eminent Professor of Physics in the University College of this city (Professor Lodge) was one of the first to make such practical applications, and I was able to show to the Royal Society at a very early period a photograph, which he had the kindness to send me, of a bullet embedded in his hand. His interest in the medical aspect of the subject remains unabated, and at the same time he has been one of the most distinguished investigators of its purely physical side. There is another way in which the Röntgen rays connect themselves with physiology, and may possibly influence medicine. It is found that if the skin is long exposed to their action it becomes very much irritated, affected with a sort of aggravated sun-burning. This suggests the idea that the transmission of the rays through the human body may be not altogether a matter of indifference to internal organs, but may, by long-continued action, produce, according to the condition of the part concerned, injurious irritation or salutary stimulation.

Jubilee of Anæsthesia.

This is the jubilee of anæsthesia in surgery. That priceless blessing to mankind came from America. It had, indeed, been foreshadowed in the first year of this century by Sir Humphrey Davy, who, having found a toothache from which he was suffering relieved as he inhaled laughing gas (nitrous oxide) threw out the suggestion that it might perhaps be used for preventing pain in surgical operations. But it was not till, on September 30th, 1846, Dr. W. T. G. Morton, of Boston, after a series of experiments upon himself and the lower animals, extracted a tooth painlessly from a patient whom he had caused to inhale the vapour of sulphuric ether, that the idea was fully realised. He soon afterwards publicly exhibited his method at the Massachusetts General Hospital, and after that event, the great discovery spread rapidly over the civilised world. I witnessed the first operation in England under ether. It was performed by Robert Liston, in University College Hospital, and it was a complete success. Soon afterwards I saw the same great surgeon amputate the thigh as painlessly, with less complicated anæsthetic apparatus, by aid of another agent, chloroform, which was being powerfully advocated as a substitute for ether by Dr. (afterwards Sir James Y.) Simpson, who also had the great merit of showing that confinements could be conducted painlessly, yet safely, under its influence. These two agents still hold the field as general anæsthetics for protracted operations, although the gas originally suggested by Davy, in consequence of its rapid action and other advantages, has taken their place in short operations, such as tooth-extraction. In the birthplace of anæsthesia, ether has always maintained its ground; but in Europe it was to a large extent displaced by chloroform till recently, when many have returned to ether, under the idea that, though less convenient, it is safer. For my own part, I believe that chloroform, if carefully administered on right principles, is, on the average, the safer agent of the two. The discovery of anæsthesia inaugurated a new era in surgery. Not only was the pain of operations abolished, but the serious, and, sometimes, mortal shock which they occasioned to the system was averted, while the patient was saved the terrible ordeal of preparing to endure them. At the same time, the field of surgery became widely extended, since many procedures in themselves desirable, but before impossible from the protracted agony they would occasion, became matters of routine practice. Nor have I by any means exhausted the list of the benefits conferred by this discovery. Anæsthesia in surgery has been from first to last a gift of science. Nitrous oxide, sulphuric ether, and chloroform are all artificial products of chemistry, their employment as anæsthetics was the result of scientific investigation, and their administration, far from being, like the giving of a dose of medicine, a matter of rule of thumb, imperatively demands the vigilant exercise of physiological and pathological knowledge. While rendering such signal service to surgery, anæsthetics have thrown light upon biology generally. It has been found that they exert their sporific influence not only upon vertebrata, but upon animals so remote in structure from man as bees and other insects. Even the functions of vegetables are suspended by their agency. They thus afford strong confirmation of the great generalisation that living matter is of the same essential nature wherever it is met with on this planet, whether in the animal or vegetable kingdom. Anæsthetics have also, in ways to which I need not here refer, powerfully promoted the progress of physiology and pathology.

Fermentation.

My next illustration may be taken from the work of Pasteur on fermentation. The prevailing opinion regarding this class of phenomena when they first engaged his attention was that they were occasioned primarily by the oxygen of the

air acting upon unstable animal or vegetable products, which, breaking up under its influence, communicated disturbance to other organic materials in their vicinity, and thus led to their decomposition. Cagniard-Latour had, indeed, shown several years before that yeast consists essentially of the cells of a microscopic fungus which grows as the sweet wort ferments; and he attributed the breaking up of the sugar into alcohol and carbonic acid to the growth of the micro-organism. In Germany, Schwann, who independently discovered the yeast plant, had published very striking experiments in support of analogous ideas regarding the putrefaction of meat. Such views had also found other advocates, but they had become utterly discredited, largely through the great authority of Liebig, who bitterly opposed them. Pasteur, having been appointed as a young man Dean of the Faculty of Sciences in the University of Lille, a town where the products of alcoholic fermentation where staple articles of manufacture, determined to study that process thoroughly; and, as a result, he became firmly convinced of the correctness of Cagniard-Latour's views regarding it. In the case of other fermentations, however, nothing fairly comparable to the formation of yeast had till then been observed. This was now done by Pasteur for that fermentation in which sugar is resolved into lactic acid. This lactic fermentation was at that time brought about by adding some animal substance, such as fibrin, to a solution of sugar, together with chalk that should combine with the acid as it was formed. Pasteur saw, what had never before been noticed, that a fine grey deposit was formed, differing little in appearance from the decomposing fibrin, but steadily increasing as the fermentation proceeded. Struck by the analogy presented by the increasing deposit to the growth of yeast in sweet wort, he examined it with the microscope, and found it to consist of minute particles of uniform size. Pasteur was not a biologist; but, although these particles were of extreme minuteness in comparison with the constituents of the yeast plant, he felt convinced that they were of an analogous nature, the cells of a tiny microscopic fungus. This he regarded as the essential ferment, the fibrin, or other so-called ferment serving, as he believed, merely the purpose of supplying to the growing plant certain chemical ingredients not contained in the sugar, but essential to its nutrition. And the correctness of this view he confirmed in a very striking manner, by doing away with the fibrin or other animal material altogether, and substituting for it mineral salts containing the requisite chemical elements. A trace of the grey deposit being applied to a solution of sugar containing these salts in addition to the chalk, a brisker lactic fermentation ensued than could be procured in the ordinary way. I have referred to this research in some detail because it illustrates Pasteur's acuteness as an observer and his ingenuity in experiment, as well as his almost intuitive perception of truth. A series of other beautiful investigations followed, clearly proving that all true fermentations, including putrefaction, are caused by the growth of micro-organisms.

Utility of Microbes.

It was natural that Pasteur should desire to know how the microbes which he showed to be the essential causes of the various fermentations took their origin. It was at that period a prevalent notion, even among many eminent naturalists, that such humble and minute beings originated *de novo* in decomposing organic substances; the doctrine of spontaneous generation, which had been chased successively from various positions which it once occupied among creatures visible to the naked eye, having taken its last refuge where the objects of study were of such minuteness that their habits and history were correspondingly difficult to trace. Here again Pasteur at once saw, as if by instinct, on which side the truth lay; and, perceiving its immense importance, he threw himself with ardour into its demonstration. I may

describe briefly one class of experiments which he performed with this object. He charged a series of narrow-necked glass flasks with a decoction of yeast, a liquid peculiarly liable to alteration on exposure to the air. Having boiled the liquid in each flask, to kill any living germs it might contain, he sealed its neck with a blow-pipe during ebullition; after which, the flask being allowed to cool, the steam within it condensed, leaving a vacuum above the liquid. If, then, the neck of the flask were broken in any locality, the air at that particular place would rush in to fill the vacuum, carrying with it any living microbes that might be floating in it. The neck of the flask having been again sealed, any germs so introduced would in due time manifest their presence by developing in the clear liquid. When any of such a series of flasks were opened and re-sealed in an inhabited room, or under the trees of a forest, multitudes of minute living forms made their appearance in them; but if this was done in a cellar long unused, where the suspended organisms, like other dust, might be expected to have all fallen to the ground, the decoction remained perfectly clear and unaltered. The oxygen and other gaseous constituents of the atmosphere were thus shown to be of themselves incapable of inducing any organic development in yeast water. Such is a sample of the many well-devised experiments by which he carried to most minds the conviction that, as he expressed it, "*la génération spontanée est une chimère*," and that the humblest and minutest living organisms can only originate by parentage from beings like themselves. Pasteur pointed out the enormous importance of these humble organisms in the economy of nature. It is by their agency that the dead bodies of plants and animals are resolved into simpler compounds fitted for assimilation by new living forms. Without their aid the world would be, as Pasteur expresses it, *encombré de cadavres*. They are essential not only to our well-being, but to our very existence. Similar microbes must have discharged the same necessary function of removing refuse and providing food for successive generations of plants and animals during the past periods of the world's history; and it is interesting to think that organisms as simple as can well be conceived to have existed when life first appeared upon our globe have, in all probability, propagated the same lowly but most useful offspring during the ages of geological time.

Antiseptic Surgery.

Pasteur's labours on fermentation have had a very important influence upon surgery. I have been often asked to speak on my share in this matter before a public audience; but I have hitherto refused to do so, partly because the details are so entirely technical, but chiefly because I have felt an invincible repugnance to what might seem to savour of self-advertisement. The latter objection now no longer exists, since advancing years have indicated that it is right for me to leave to younger men the practice of my dearly-loved profession. And it will perhaps be expected that, if I can make myself intelligible, I should say something upon the subject on the present occasion. Nothing was formerly more striking in surgical experience than the difference in the behaviour of injuries according to whether the skin was implicated or not. Thus, if the bones of the leg were broken, and the skin remained intact, the surgeon applied the necessary apparatus without any other anxiety than that of maintaining a good position of the fragments, although the internal injury to bones and soft parts might be very severe. If, on the other hand, a wound of the skin was present communicating with the broken bones, although the damage might be in other respects comparatively slight, the compound fracture, as it was termed, was one of the most dangerous accidents that could happen. Mr. Syme, who was, I believe, the safest surgeon of his time, once told me that he was inclined to think that it would be, on the whole, better if all compound fractures of the leg were subjected to

amputation, without any attempt to save the limb. What wasthe cause of this astonishing difference? It was clearly in some way due to the exposure of the injured parts to the external world. One obvious effect of such exposure was indicated by the odour of the discharge, which showed that the blood in the wound had undergone putrefactive change by which the bland nutrient liquid had been converted into highly irritating and poisonous substances. I have seen a man with compound fracture of the leg die within two days of the accident, as plainly poisoned by the products of putrefaction as if he had taken a fatal dose of some potent toxic drug. An external wound of the soft parts might be healed in one of two ways. If its surfaces were clean cut and could be brought into accurate apposition, it might unite rapidly and painlessly "by the first intention. This, however, was exceptional. Too often the surgeon's efforts to obtain primary union were frustrated: the wound inflamed, and the retentive stitches had to be removed, allowing it to gape; and then, as if it had been left open from the first, healing had to be effected in the other way, which it is necessary for me briefly to describe. An exposed raw surface became covered, in the first instance, with a layer of clotted blood or certain of its constituents, which invariably putrefied; and the irritation of the sensitive tissues by the putrid products appeared to me to account sufficiently for the inflammation which was always in and around an open wound during the three or four days which elapsed before what were termed "granulations" had been produced. These constituted a coarsely granular coating of very imperfect or embryonic structure, destitute of sensory nerves and prone to throw off matter or pus, rather than absorb, as freshly divided tissues do, the products of putrefaction, The granulations thus formed a beautiful living plaster, which protected the sensitive parts beneath from irritation, and the system generally from poisoning and consequent febrile disturbance. The granulations had other useful properties, of which I may mention their tendency to shrink as they grew, thus gradually reducing the dimensions of the sore. Meanwhile, another cause of its diminution was in operation. The cells of the epidermis or scarf-skin of the cutaneous margins were perpetually producing a crop of young cells of a similar nature, which gradually spread over the granulations till they covered them entirely, and a complete cicatrix or scar was the result. Such was the other mode of healing, that by granulation and cicatrisation; a process which, when it proceeded unchecked to its completion, commanded our profound admiration. It was, however, essentially tedious compared with primary union, while, as we have seen, it was always preceded by more or less inflammation and fever, sometimes very serious in their effects. It was also liable to unforeseen interruptions. The sore might become larger instead of smaller, cicatrisation giving place to ulceration in one of its various forms, or even to the frightful destruction of tissue which, from the circumstance that it was most frequently met with in hospitals, was termed hospital gangrene. Other serious and often fatal complications might arise, which the surgeon could only regard as untoward accidents, and over which he had no efficient control. It will be readily understood from the above description that the inflammation which so often frustrated the surgeon's endeavours after primary union was, in my opinion, essentially due to decomposition of blood within the wound. These and many other considerations had long impressed me with the greatness of the evil of putrefaction in surgery. I had done my best to mitigate it by scrupulous ordinary cleanliness and the use of various deodorant lotions. But to prevent it altogether appeared hopeless while we believed, with Liebig, that its primary cause was the atmospheric oxygen which, in accordance with the researches of Graham, could not fail to be perpetually diffused through the porous dressings which were used to absorb the blood discharged from the wound. But when Pasteur had shown

that putrefaction was a fermentation caused by the growth of microbes, and that these could not arise *de novo* in the decomposable substance, the problem assumed a more hopeful aspect. If the wound could be treated with some substance which, without doing too serious mischief to the human tissues, would kill the microbes already contained in it, and prevent the future access of others in the living state, putrefaction might be prevented, however freely the air with its oxygen might enter. I had heard of carbolic acid as having a remarkable deodorising effect upon sewage, and having obtained from my colleague, Dr. Anderson, Professor of Chemistry in the University of Glasgow, a sample which he had of this product, then little more than a chemical curiosity in Scotland, I determined to try it in compound fractures. Applying it undiluted to the wound, with an arrangement for its occasional renewal, I had the joy of seeing these formidable injuries follow the same safe and tranquil course as simple fractures, in which the skin remains unbroken. At the same time we had the intense interest of observing in open wounds what had previously been hidden from human view—the manner in which subcutaneous injuries are repaired. Of special interest was the process by which portions of tissue killed by the violence of the accident were disposed of, as contrasted with what had till then been invariably witnessed. Dead parts had been always seen to be gradually separated from the living by an inflammatory process and thrown off as sloughs. But when protected by the antiseptic dressing from becoming putrid and therefore irritating, a structure deprived of its life caused no disturbance in its vicinity; and, on the contrary, being of a nutritious nature, it served as pabulum for the growing elements of the neighbouring living structures, and these became in due time entirely substituted for it. Even dead bone was seen to be thus replaced by living osseous tissue. This suggested the idea of using threads of dead animal tissue for tying blood-vessels; and this was realised by means of catgut, which is made from the intestine of the sheep. If deprived of living microbes, and otherwise properly prepared, catgut answers its purpose completely—the knot holding securely, while the ligature around the vessel becomes gradually absorbed and replaced by a ring of living tissue. The threads, instead of being left long, as before, could now be cut short, and the tedious process of separation of the ligature, with its attendant serious danger of bleeding, was avoided. Undiluted carbolic acid is a powerful caustic, and although it might be employed in compound fracture, where some loss of tissue was of little moment in comparison with the tremendous danger to be averted, it was altogether unsuitable for wounds made by the surgeon. It soon appeared, however, that the acid would answer the purpose aimed at, though used in diluted forms devoid of caustic action, and therefore applicable to operative surgery. According to our then existing knowledge, two essential points had to be aimed at—to conduct the operation so that on its completion the wound should contain no living microbes, and to apply a dressing capable of preventing the access of other living organisms till the time should have arrived for changing it.

Value of Carbolic Acid.

Carbolic acid lent itself well to both these objects. Our experience with this agent brought out what was, I believe, a new principle in pharmacology—namely, that the energy of action of any substance upon the human tissues depends not only upon the proportion in which it is contained in the material used as a vehicle for its administration, but also upon the degree of tenacity with which it is held by its solvent. Water dissolves carbolic acid sparingly, and holds it extremely lightly, leaving it free to act energetically on other things for which it has greater affinity, while various organic substances absorb it greedily and hold it tenaciously. Hence its watery solution seemed admirably suited for a detergent lotion to be used

during the operation for destroying any microbes that might fall upon the wound, and for purifying the surrounding skin and also the surgeon's hands and instruments. For the last-named purpose it had the further advantage that it did not act on steel. For an external dressing the watery solution was not adapted, as it soon lost the acid it contained, and was irritating while it lasted. For this purpose some organic substances were found to answer well. Large proportions of the acid could be blended with them in so bland a form as to be unirritating; and such mixtures, while perpetually giving off enough of the volatile salt to prevent organic development in the discharges that flowed past them, served as a reliable store of the antiseptic for days together. The appliances which I first used for carrying out the antiseptic principle were both rude and needlessly complicated. The years that have since passed have witnessed great improvements in both respects. Of the various materials which have been employed by myself and others, and their modes of application, I need say nothing except to express my belief, as a matter of long experience, that carbolic acid, by virtue of its powerful affinity for the epidermis and oily matters associated with it, and also its great penetrating power, is still the best agent at our disposal for purifying the skin around the wound. But I must say a few words regarding a most important simplification of our procedure. Pasteur, as we have seen, had shown that the air of every inhabited room teems with microbes; and for a long time I employed various more or less elaborate precautions against the living atmospheric dust, not doubting that, as all wounds, except the few which healed completely by the first intention, underwent putrefactive fermentation, the blood must be a peculiarly favourable soil for the growth of putrefactive microbes; but I afterwards learnt that such was by no means the case. I had performed many experiments in confirmation of Pasteur's germ theory, not, indeed, in order to satisfy myself of its truth, but in the hope of convincing others. I had observed that uncontaminated milk, which would remain unaltered for an indefinite time if protected from dust, was made to teem with microbes of different kinds by a very brief exposure to the atmosphere, and that the same effect was produced by the addition of a drop of ordinary water. But when I came to experiment with blood drawn with antiseptic precautions into sterilised vessels, I saw to my surprise that it might remain free from microbes in spite of similar access of air or treatment with water. I even found that if very putrid blood was largely diluted with sterilised water, so as to diffuse its microbes widely, and wash them of their acrid products, a drop of such solution added to pure blood might leave it unchanged for days at the temperature of the body, although a trace of the septic liquid undiluted caused intense putrefaction within twenty-four hours. Hence I was led to conclude that it was the grosser forms of septic mischief, rather than microbes in the attenuated condition in which they existed in the atmosphere, that we had to dread in surgical practice. And at the London Medical Congress in 1881, I hinted, when describing the experiments I have alluded to, that it might turn out possible to disregard altogether the atmospheric dust. But greatly as I should have rejoiced at such a simplification of our procedure, if justifiable, I did not then venture to test it in practice. I knew that with the safeguards which we then employed I could ensure the safety of my patients, and I did not dare to imperil it by relaxing them. There is one golden rule for all experiments upon our fellow-men: let the thing tried be that which, according to our best judgment, is the most likely to promote the welfare of the patient. In other words, do as you would be done by.

Harmlessness of Atmospheric Dust.

Nine years later, however, at the Berlin Congress in 1890, I was able to bring forward what was, I believe, absolute demonstration of the harmlessness

of the atmospheric dust in surgical operations. This conclusion has been justified by subsequent experience: the irritation of the wound by antiseptic irrigation and washing may therefore now be avoided, and nature left quite undisturbed to carry out her best methods of repair, while the surgeon may conduct his operations as simply as in former days, provided always that, deeply impressed with the tremendous importance of his object, and inspiring the same conviction in all his assistants, he vigilantly maintains from first to last, with a care that, once learnt, becomes instinctive, but for the want of which nothing else can compensate, the use of the simple means which would suffice to exclude from the wound the coarser forms of septic impurity. Even our earlier and ruder methods of carrying out the antiseptic principle soon produced a wonderful change in my surgical wards in the Glasgow Royal Infirmary, which, from being some of the most unhealthy in the kingdom, became, as I believe I may say without exaggeration, the healthiest in the world; while other wards, separated from mine only by a passage a few feet broad, where former modes of treatment were for a while continued, retained their former insalubrity. This result, I need hardly remark, was not in any degree due to special skill on my part, but simply to the strenuous endeavour to carry out strictly what seemed to me a principle of supreme importance. Equally striking changes were afterwards witnessed in other institutions. Of these I may give one example. In the great Allgemeines Krankenhaus of Munich, hospital gangrene had become more and more rife from year to year, till at length the frightful condition was reached that 80 per cent. of all wounds became affected by it. It is only just to the memory of Professor von Nussbaum, then the head of that establishment, to say that he had done his utmost to check this frightful scourge; and that the evil was not caused by anything peculiar in his management was shown by the fact that in a private hospital under his care there was no unusual unhealthiness. The larger institution seemed to have become hopelessly infected, and the city authorities were contemplating its demolition and reconstruction. Under these circumstances, Professor von Nussbaum despatched his chief assistant, Dr. Lindpainter, to Edinburgh, where I at that time occupied the chair of clinical surgery, to learn the details of the antiseptic system as we then practised it. He remained until he had entirely mastered them, and after his return all the cases were on a certain day dressed on our plan. From that day forward not a single case of hospital gangrene occurred in the Krankenhaus. The fearful disease pyæmia, likewise disappeared, and erysipelas soon followed its example. But it was by no means only in removing the unhealthiness of hospitals that the antiseptic system showed its benefits. Inflammation being suppressed, with attendant pain, fever, and wasting discharge, the sufferings of the patient were, of course, immensely lessened; rapid primary union being now the rule, convalescence was correspondingly curtailed; while as regards safety and the essential nature of the mode of repair, it became a matter of indifference whether the wound had clean-cut surfaces which could be closely approximated, or whether the injury inflicted had been such as to cause destruction of tissue. And operations which had been regarded from time immemorial as unjustifiable, were adopted with complete safety.

Microbes and Disease.

The striking results of the application of the germ theory to surgery, acted as a powerful stimulus to the investigation of the nature of the micro-organisms concerned; and it soon appeared that putrefaction was by no means the only evil of microbic origin to which wounds were liable. I had myself very early noticed that hospital gangrene was not necessarily attended by any unpleasant odour; and I afterwards made a similar observation regarding the matter formed in a remarkable epidemic of erysipelas in

Edinburgh, obviously of infective character. I had also seen a careless dressing followed by the occurrence of suppuration without putrefaction. And as these non-putrefactive disorders had the same self-propagating property as ferments, and were suppressed by the same antiseptic agencies which were used for combating the putrefactive microbes, I did not doubt that they were of an analogous origin: and I ventured to express the view that, just as the various fermentations had each its special microbe, so it might be with the various complications of wounds. This surmise was afterwards amply verified. Professor Ogston, of Aberdeen, was an early worker in this field, and showed that in acute abscesses, that is to say those which run a rapid course, the matter, although often quite free from unpleasant odour, invariably contains micro-organisms belonging to the group which, from the spherical form of their elements, are termed micrococci; and these he classed as streptococci or staphylococci, according as they were arranged in chains or disposed in irregular clusters like bunches of grapes. The German pathologist, Fehleisen, followed with a beautiful research, by which he clearly proved that erysipelas is caused by a streptococcus. A host of earnest workers in different countries have cultivated the new science of bacteriology, and, while opening up a wide fresh domain of biology, have demonstrated in so many cases the casual relation between special micro-organisms and special diseases, not only in wounds, but in the system generally, as to afford ample confirmation of the induction which had been made by Pasteur that all infective disorders are of microbic origin. Not that we can look forward with anything like confidence to being able ever to see the *materies morbi* of every disease of this nature. One of the latest of such discoveries has been that by Pfeiffer of Berlin of the bacillus of influenza, perhaps the most minute of all micro-organisms ever yet detected. The bacillus of anthrax, the cause of a plague common among cattle in some parts of Europe, and often communicated to sorters of foreign wool in this country, is a giant as compared with this tiny being; and supposing the microbe of any infectious fever to be as much smaller than that of anthrax—a by no means unlikely hypothesis—it is probable that it would never be visible to man. The improvements of the microscope, based on the principle established by my father in the earlier part of the century, have apparently nearly reached the limits of what is possible. But that such parasites are really the causes of all this great class of diseases can no longer be doubted.

After referring to the work of Koch, and the discovery of the microbe of cholera, the President proceeded:—

Chicken Cholera.

I have next to invite your attention to some earlier work of Pasteur. There is a disease known in France under the name of *choléra des poules*, which often produced great havoc among the poultry yards of Paris. It had been observed that the blood of birds that had died of this disease was peopled by a multitude of minute bacteria, not very dissimilar in form and size to the microbe of the lactic ferment to which I have before referred. And Pasteur found that, if this bacterium was cultivated outside the body for a protracted period under certain conditions, it underwent a remarkable diminution of its virulence; so that, if inoculated into a healthy fowl, it no longer caused the death of the bird, as it would have done in its original condition, but produced a milder form of the disease which was not fatal. And this altered character of the microbe, caused by certain conditions, was found to persist in successive generations cultivated in the ordinary way. Thus was discovered the great fact of what Pasteur termed the *atténuation des*

virus, which at once gave the clue to understanding what had before been quite mysterious, the difference in virulence of the same disease in different epidemics. But he made the further very important observation that a bird which had gone through the mild form of the complaint had acquired immunity against it in its most virulent condition. Pasteur afterwards succeeded in obtaining mitigated varieties of microbes for some other diseases; and he applied with great success the principle which he had discovered in fowl-cholera for protecting the larger domestic animals against the plague of anthrax.

After some remarks on vaccination, the President referred to Pasteur's work.

Hydrophobia and Rabies.

In 1880 Pasteur entered upon the study of that terrible but then most obscure disease, hydrophobia or rabies, which from its infective character he was sure must be of microbe origin, although no micro-organism could be detected in it. He early demonstrated the new pathological fact that the virus had its essential seat in the nervous system. This proved the key to his success in this subject. One result that flowed from it has been the cause of unspeakable consolation to many. The foolish practice is still too prevalent of killing the dog that has bitten anyone, on the absurd notion that, if it were mad, its destruction would prevent the occurrence of hydrophobia in the person bitten. The idea of the bare possibility of the animal having been so affected causes an agony of suspense during the long weeks or months of possible incubation of the disease. Very serious nervous symptoms aping true hydrophobia have been known to result from the terror thus inspired. Pasteur showed that if a little of the brain or spinal cord of a dog that had been really mad was inoculated in an appropriate manner into a rabbit it infallibly caused rabies in that animal in a few days. If, therefore, such an experiment was made with a negative result, the conclusion might be drawn with certainty that the dog had been healthy. It is, perhaps, right that I should say that the inoculation is painlessly done under an anæsthetic, and that in the rabbit rabies does not assume the violent form that it does in the dog, but produces gradual loss of power with little if any suffering.

Toxins and Anti-Toxins.

It was shown several years ago by Roux and Yersin, working in the *Institut Pasteur*, that the crust or false membrane which forms upon the throats of patients affected with diphtheria contains bacteria which can be cultivated outside the body in a nutrient liquid, with the result that it acquires poisonous qualities of astonishing intensity, comparable to that of the secretion of the poison-glands of the most venomous serpents. And they also ascertained that the liquid retained this property after the microbes had been removed from it by filtration, which proved that the poison must be a chemical substance in solution, as distinguished from the living element which had produced it. These poisonous products of bacteria, or toxins as they have been termed, explain the deadly effects of some microbes, which it would otherwise be impossible to understand. Thus, in diphtheria itself, the special bacillus which was shown by Löffler to be its cause, does not become propagated in the blood, like the microbes of chicken cholera, but remains confined to the surface on which it first appeared; but the toxin which it secretes is absorbed from that surface into the blood, and so poisons the system. Similar observations have been made with regard to the microbes of some other diseases, as, for example, the bacillus of tetanus or lockjaw. This remains localised in the wound, but forms a special toxin of

extreme potency, which becomes absorbed and diffused through the body. Wonderful as it seems, each poisonous microbe appears to form its own peculiar toxin. Koch's tuberculin was of this nature, a product of the growth of the tubercle bacillus in culture media. Here, again, great effects were produced by extremely minute quantities of the substance; but here a new peculiarity showed itself—viz., that patients affected with tubercular disease, in any of its varied forms, exhibited inflammation in the affected part and general fever after receiving under the skin an amount of the material which had no effect whatever upon healthy persons.

Reviewing briefly the work of Koch, Kitasato, Ehrlich, Calmette, Roux, and others, the President went on to say:—

Phagocytosis.

I have, lastly, to bring before you a subject which, though not bacteriological, has intimate relations with bacteria. If a drop of blood is drawn from the finger by a prick with a needle, and examined microscopically between two plates of glass, there are seen in it minute solid elements of two kinds, the one pale orange bi-concave discs, which, seen in mass, give the red colour to the vital fluid, the other, more or less granular spherical masses of the soft material called protoplasm, destitute of colour, and therefore called the colourless or white corpuscles. It has been long known that if the microscope was placed at such a distance from a fire as to have the temperature of the human body, the white corpuscles might be seen to put out and retract little processes or pseudopodia, and by their means crawl over the surface of the glass, just like the extremely low forms of animal life termed, from this faculty of changing their form, amœbæ. It was a somewhat weird spectacle, that of seeing what had just before been constituents of our own blood moving about like independent creatures. Yet there was nothing in this consistent with what we knew of the fixed components of the animal frame. For example, the surface of a frog's tongue is covered with a layer of cells, each of which is provided with two or more lashing filaments or cilia, and those of all the cells acting in concert cause a constant flow of fluid in a definite direction over the organ. If we gently scrape the surface of the animal's tongue, we can detach some of these ciliated cells; and on examining them with the microscope in a drop of water, we find that they will continue for an indefinite time their lashing movements, which are just as much living or vital in their character as the writhings of a worm. And, as I observed many years ago, these detached cells behave under the influence of a stimulus just like parts connected with the body, the movements of the cilia being excited to greater activity by gentle stimulation, and thrown into a state of temporary inactivity when the irritation was more severe. Thus each constituent element of our bodies may be regarded as in one sense an independent living being, though all work together in marvellous harmony for the good of the body politic. The independent movements of the white corpuscles outside the body were therefore not astonishing; but they long remained matters of mere curiosity. Much interest was called to them by the observations of the German pathologist Conheim, that in some inflammatory conditions they passed through the pores in the walls of the finest blood-vessels, and thus escaped into the interstices of the surrounding tissues. Cohnheim attributed their transit to the pressure of the blood. But why it was that, though larger than the red corpuscles, and containing a nucleus which the red ones have not, they alone passed through the pores of the vessels, or why it was that this emigration of the white corpuscles occurred abundantly in some inflammations and was absent in others, was quite unexplained. These white corpuscles, however, have been

invested with extraordinary new interest by the researches of the Russian naturalist and pathologist, Metchnikoff. He observed that after passing through the walls of the vessels, they not only crawl about like amœbæ, but, like them, receive nutritious materials into their soft bodies and digest them. It is thus that the effete material of a tadpole's tail are got rid of; so that they play a most important part in the function of absorption. But still more interesting observations followed. He found that a microscopic crustacean, a kind of water-flea, was liable to be infested by a fungus which had exceedingly sharp-pointed spores. These were apt to penetrate the coats of the creature's intestine and project into its body-cavity. No sooner did this occur with any spore than it became surrounded by a group of the cells which are contained in the cavity of the body, and correspond to the white corpuscles of our blood. These proceeded to attempt to devour the spore; and if they succeeded, in every such case the animal was saved from the invasion of the parasite. But if the spores were more than could be disposed of by the devouring cells (phagocytes, as Metchnikoff termed them), the water-flea succumbed. Starting from this fundamental observation, he ascertained that the microbes of infective diseases are subject to this same process of devouring and digestion, carried on both by the white corpuscles and by cells that line the blood-vessels. And by a long series of most beautiful researches he has, as it appears to me, firmly established the great truth that phagocytosis is the main defensive means possessed by the living body against the invasion of its microscopic foes. The power of the system to produce anti-toxic substances to counteract the poisons of microbes is undoubtedly in its own place of great importance. But in the large class of cases in which animals are naturally refractory to particular infective diseases, the blood is not found to yield any anti-toxic element by which the natural immunity can be accounted for. Here phagocytosis seems to be the sole defensive agency. And even in cases in which the serum does possess anti-toxic, or, as it would seem in some cases, germicidal properties, the bodies of the dead microbes must at last be got rid of by phagocytosis, and some recent observations would seem to indicate that the useful elements of the serum may be, in part at least, derived from the digestive juices of the phagocytes. If ever there was a romantic chapter in pathology, it has surely been that of the story of phagocytosis.

Healing of Wounds by First Intention.

I was myself peculiarly interested by these observations of Metchnikoff's, because they seemed to me to afford clear explanation of the healing of wounds by first intention under circumstances before incomprehensible. This primary union was sometimes seen to take place in wounds treated with water-dressing—that is to say, a piece of wet lint covered with a layer of oiled silk to keep it moist. This, though cleanly when applied, was invariably putrid within twenty-four hours. The layer of blood between the cut surfaces was thus exposed at the outlet of the wound to a most potent septic focus. How was it prevented from putrefying, as it would have done under such influence if, instead of being between divided living tissues, it had been between plates of glass or other indifferent material? Pasteur's observations pushed the question a step further. It now was, How were the bacteria of putrefaction kept from propagating in the decomposable film? Metchnikoff's phagocytosis supplied the answer. The blood between the lips of the wound became rapidly peopled with phagocytes, which kept guard against the putrefactive microbes, and seized them as they endeavoured to enter. If phagocytosis was ever able to cope with septic microbes in so concentrated and intense a form, it could hardly fail to deal effectually with them in the very mitigated condition in which they are present in the air. We are thus strongly confirmed in our conclusion that the

atmospheric dust may safely be disregarded in our operations; and Metchnikoff's researches, while they have illumined the whole pathology of infective diseases, have beautifully completed the theory of antiseptic treatment in surgery. I might have taken equally striking illustrations of my theme from other departments in which microbes play no part. In fact, any attempt to speak of all that the art of healing has borrowed from science, and contributed to it, during the past half century, would involve a very extensive dissertation on pathology and therapeutics. I have culled specimens from a wide field, and I only hope that in bringing them before you, I have not overstepped the bounds of what is fitting before a mixed company. For many of you my remarks can have had little, if any, novelty; for others they may perhaps possess some interest, as showing that medicine is no unworthy ally of the British Association—that, while her practice is ever more and more based on science, the ceaseless efforts of her votaries to improve what have been fittingly designated *Quæ prosunt omnibus artes*, are ever adding largely to the sum of abstract knowledge.

NOTES ON A CASE OF HERNIA THROUGH THE CRURAL ARCH.

BY MESSRS. SPREULL AND MC PHAIL M.R.C.V.S., DUNDEE.

THE following case came under our observation lately, and being of such an unique character we resolved to do our best to place it before the readers of your valuable journal.

Subject.

A valuable dark brown carriage mare, seven years old, the property of a gentlemen in this neighbourhood.

Previous History.

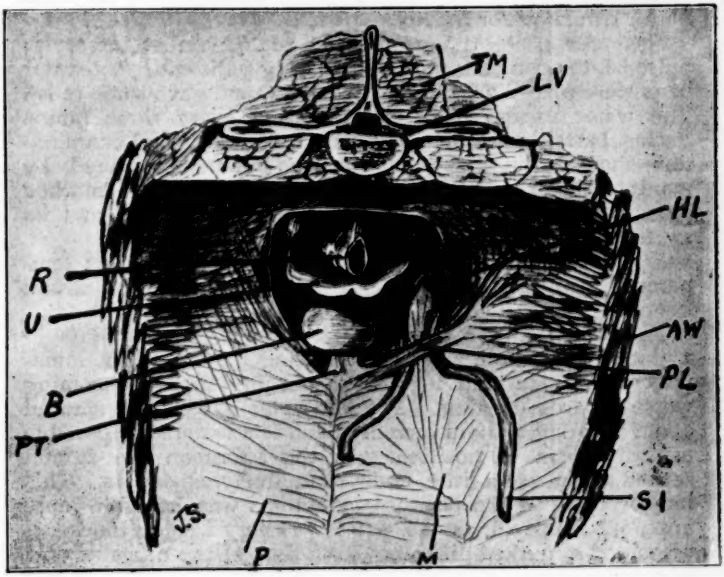
Bought some two years before; she had been uniformly healthy until about six months before her death, when she contracted broken wind, but nevertheless she continued to perform her work fairly well. Owing to this malady, oat straw had been substituted for hay in her daily rations.

History.

September 2nd.—9 p.m., called in haste, found mare lying in stall, rolling about and very much pained. Administered an anodyne, which gave temporary relief. About an hour afterwards she again became pained and continued so during the night, necessitating our attendance, and though the bowels were somewhat costive, we considered the administration of a purgative injudicious at this stage. Hypodermic injections of morphia were given at intervals.

September 3rd.—Towards 5 a.m. she began to settle. On examination per rectum the bowels were found in the same

dry condition as that found the evening before, but in addition a cushion-like swelling presented itself on the left side of the pelvis, below the uterus, and to the left of the bladder. Connected with this anteriorly some portion of the bowel seemed stretched like a cord, and taxis or pressure applied to it in a forward direction proved without avail. An aloetic ball was now given. The mare continued pained at intervals throughout the day, and in the afternoon became excessively tympanitic, so that she had to be relieved with



DIAGRAMMATIC VIEW OF PELVIS SHOWING THE HERNIA—SEEN FROM IN FRONT.

LV—Lumbar Vertebra. TM—Muscles in transverse section. AW—Abdominal wall in section. R—Rectum. B—Bladder. U—Uterus. PT—Prepubian tendon. P—Peritoneum. M—Mesentery. SI.—Small Intestine. HL—Hernial loop of intestine showing attachments. PL—Poupart's ligament.

the trocar and cannula. Towards night tympanites re-appeared, and one gramme of barium chloride was given intravenously about 10 p.m. During this day she had had no passage, but the barium chloride soon began to act by expelling flatus, and later on repeated defecations took place.

September 4th.—Bowels continued acting freely; more easy

all day. Rectal exploration disclosed the same condition of the parts. Taxis was again applied, but to no purpose. Towards evening a slight ruddy swelling appeared in the perineal region to the left of the anus and vulva and opposite the posterior extremity of the internal enlargement.

September 5th.—Purging continued; pulse 76, temperature 104° F. Perineal swelling enlarging. Animal continued pained at intervals throughout the day.

September 6th.—Bowels acting less frequently; pulse 86, temperature 105·5° F. Slight return of appetite; no acute pain; drinks water readily.

September 7th.—Passage ceased; acute pain at intervals; pulse 86, temperature 106° F. Fearing peritonitis, hot-water bags were placed around the abdomen, and gave some relief. The water in the bags was renewed every three hours. Perineal swelling even larger than before. Rectal examination showed the same condition as before, unaltered by manipulation, the bowels being dry and slimy. No marked pain was evinced on percussion of the abdomen, and no swelling present at the groin.

September 8th.—Still no passage; intermittent pain; temperature 102° F., pulse 72. Ate a little grass and drank freely.

September 9th.—No passage. Administered stimulants in a pint of linseed oil. Perineal swelling gone. Slight lameness of the near hind leg in the morning, rapidly becoming worse towards evening. The hot-water bags were removed about mid-day, as pain increased and it was found impossible to keep them in position. In the afternoon the animal settled again, ate a little, and drank freely, as before. This improvement of the outward symptoms was, however, more apparent than real, as the pulse was very feeble: indeed, it presented a marked difference from that of the previous day. The temperature was 100·5° F. The mare continued free from pain and remained standing all night, although gradually losing the power of her hind-quarters. About five a.m. she fell down, gave a few struggles, and died.

Autopsy.

On opening the abdomen the bowels and peritoneum were found much congested, but otherwise healthy. The stomach and small bowel were full of watery ingesta. On turning, however, to what we considered the seat of the trouble, we found that the swelling in the pelvis was formed by a loop of the small intestine, which had passed through a slit in the

aponeuroses of the internal and external oblique muscles, under Poupart's ligament, and then turning up passed through the crural arch into the pelvis. This loop of bowel, about 15 inches long, and situated some 18 inches in front of the ileo-cæcal valve, was held down and strangulated by a fibrous band about one inch broad (Poupart's ligament). The strangulated portion was intensely inflamed and slightly gangrenous, the lumen being much encroached upon owing to the thickening of the bowel wall. It was adherent at two points to the pelvic fascia, one corresponding to the upper surface of the iliacus, the other lower down and more anteriorly. These adhesions were evidently quite recent; they contained much lymph-like effusion, and were readily broken down with the finger. There were no distinct adhesions between the bowel and the structures through which it passed, but there was considerable peritonitis around this area. The vessels in the pelvic fascia were engorged, and extravasations were numerous, no doubt accounting for the perineal swelling which was noticeable during life. Extravasations were present also under the pelvis around the intestines of the adductor muscles of the left side.

Remarks.

The presence of the slit or rupture in the aponeurosis of the oblique abdominal muscles is, perhaps, the strangest feature of this remarkable case. We are unable to say whether it was of congenital origin, or produced by violent efforts in coughing attendant upon the mare's broken-winded condition, but feel certain that the lesion was present for some considerable time before the advent of her fatal illness. It is evident that strangulation could not have been complete from the beginning, else our case would have terminated more rapidly, and the gangrene of the intestinal loop would have been more complete. Our only regret is that we did not attempt the reduction of the hernia from an opening in the flank; but our fears as to the existence of a more extensive peritonitis, seemingly indicated by the state of the pulse and temperature, dissuaded us from such an operation.

CHLORIDE OF BARIUM.

BY W. R. DAVIS, NEW VETERINARY COLLEGE.

THE intravenous injection of chloride of barium for colic in the horse has been adopted on the continent and very favourable reports have been published as to its efficacy. New

remedies are somewhat slow in getting taken up by English practitioners who are chary of using drugs, when these have received the imprimatur of foreign veterinary surgeons only. As this therapeutic agent is undoubtedly a very useful, and with some limitations, a perfectly safe one, perhaps some readers who are in the habit of using it would give us their experience with regard to it. I have tried barium chloride many times and have nothing but praise for it. I will give a short account of the last case in which I administered it :—

Big young cart-horse brought to the infirmary, the driver stating that the animal had tried to lie down in the cart and had been bad two hours. When unharnessed and put in a box symptoms of colic were shown by the patient, which, however, were not very severe. An anodyne draught soon dispelled them, but there was a return of pain in five hours. A draught containing opium, turpentine and oil, enema of oil and warm water, and again disappearance of the colic which did not return that night.

Second Day.—Very little fæces have been passed and about 11 a.m. there is a return of the pain which now shows itself in a much more serious form.

Accelerated pulse and respiration, sweating, rolling ; the horse remains down nearly all the time. This is the state of matters all day and all night with very few remissions. Several draughts of oil, opium, carbonate of ammonia and two hypodermic injections of morphia and atropia were vainly exhibited, plus numerous enemas and kneading of the bowel per rectum.

Third Day.—Pain is almost continuous. There is some sweating, but the pulse is still a good one and beats 55 per minute. Per rectum the colon can be felt loaded with fæces, but enemas are returned as they are given.

At mid-day 15 grains of barium chloride dissolved in a drachm and a-half of water was injected into the jugular, and one hour afterwards the horse was free from pain and had defecated several times. A few hours afterwards a bran mash was offered him and was readily eaten, and a perfect recovery resulted.

I have had several cases similar to the above. It should be stated that one or two fatalities have been recorded as occurring soon after the intravenous injection of barium chloride, and Dickerhoff, who first advocated its use, counsels that it be not employed when the circulation is greatly accelerated. As to the *modus operandi*, dissolve 60 grains of barium chloride in an ounce of water (distilled water

preferably), and filter it. This will keep for a few weeks, but it is better made fresh. The dose of this solution is one dram to two drams.

The ordinary hypodermic syringe does quite well to inject with ; the needle should be used, not the trocar. Wash the syringe out with hot solution of carbolic acid, five per cent., and wash the upper third of the jugular gutter with the same solution.

Get up the vein by pressing on it low down in the neck with the fingers of the left hand, and push the needle into the filled vein from above downwards and slightly inwards. The appearance of a drop of blood in the vestibule of the needle shows that the instrument is in the blood stream. Now inject the solution slowly. To get the vein up readily have the horse's head held up and to the side away from you. The dose should not be repeated under four to six hours. Chloride of barium does very well for big dogs, the subjects of constipation, but for them and for horses as well it is best to try some doses of oil and enemas first. The dose for a big dog is about three grains (18 drops of the solution).

ULCERATIVE ENDOCARDITIS FOLLOWING INFLUENZA.

BY G. W. CARTER, ESQ., F.R.C.V.S., KEIGHLEY.

DURING December and January last I had under treatment for influenza a van horse, five years old. The symptoms were the usual ones that accompany a not very severe attack of that malady. They did not differ from those shown by many horses which were affected at the same time. The horse, to all appearance, made a good recovery ; the cough was, however, rather more persistent than usual.

In the early part of June the owner decided to let the animal have a run at grass, and he was turned away and brought up on August 2nd, when he was found to be very low in condition, but this was attributed to the bareness of the pasture.

I was called upon to see him on August 23rd, when I found that the horse was suffering heart mischief. The pulse was very rapid, and small venous pulse far up the jugular, visible mucous membranes pallid, œdema of the limbs marked, and slight œdema also on the under surface of sternum.

The appetite was fairly good, and continued so up to the end.

The horse lies down regularly, and seems to rest well when down.

About a week before death the patient went very lame upon the off hind limb, but nothing was observed to account for it, nor was the lameness localized, which is not very surprising, considering the œdematous condition of the legs. The shoe was removed, the foot poulticed, and in three days the lameness had disappeared.

On September 4th, without having given any signs of approaching death, the horse suddenly dropped and died almost immediately.

Post-mortem.—On opening the chest, it was seen that the heart was of enormous size; firm, fibrous clots in both ventricles, extending into the auricles and into the large vessels. On each of the divisions of the tricuspid valves, and on some of the chordæ tendinæ, were growths of varying size. One was as big as a pigeon's egg. The cusps were affected in such a way that although there were raised patches with

ragged surfaces that might be called vegetations, yet the whole of the valve, right up to its attachment, was greatly thickened. On cutting into one of these thickened cusps it was firm and grey in the centre, soft and brownish on the surface. The mitral valve was also affected, but not nearly to the extent that was witnessed in the tricuspid. The aortic and pulmonary valves were not affected.

The lungs were congested, and here and there were small patches of consolidation marked out from the surrounding tissue by their dark colour. The liver was enlarged, its texture was firmer than normal, and it was congested with blood. The kidneys were both much larger than normal (perhaps double the size); its texture, too, was firm and resistant. The spleen was apparently unaltered.

The growths were, doubtless, the effects of the attack of influenza from which the animal suffered in December last. The microbes that induce pneumonia are often found to attack the heart, and those of influenza are likely to have the same faculty.

The lameness and sudden death.—The lameness may, perhaps, have been due to the microbes or their toxines affecting the sesamoid sheath, as they so frequently do in or after influenza; or, again, an explanation may be found in the plugging of some of the vessels of the affected limb by bits washed off from the vegetations in the left heart. The suddenness of the animal's death may be accounted for by emboli from the same source reaching the brain, and inducing subsequent hæmorrhage there.

The photo shows a portion of the right heart and tricuspid. The valve greatly thickened by the new formations, the chordæ tendinæ being also the seat of vegetations.

VERMINOUS ANEURISM OF THE ANTERIOR MESENTERIC IN A FOAL.

BY JAS. BORTHWICK, ESQ., M.R.C.V.S., KIRKLISTON.

On Friday, August 14th, I was called to see a very valuable thoroughbred foal, said to be suffering from colic. I found my patient to have what appeared to be a mild attack, and prescribed an anodyne draught, gave an enema, after which the painful symptoms disappeared, and recovery seemed assured. The next day, however, there was a recurrence of the colic in a more aggravated form. An oleaginous aperient and anodyne draughts were given; enemas, hot cloths to the abdomen, and other remedial measures were

taken during this day, but the little creature succumbed on Sunday. The symptoms were those usually seen in cares of enteritis, and need not be further described.

This foal had a history of intermittent lameness, which the people in charge considered as a peculiarity of gait rather than a real lameness. In progression the off hind leg was carried forward all right, but the left one was advanced stiffly and then was sharply adducted and planted down almost in front of the off foot. It appeared to me that there was pain in the movement, but it could not be localized. At times the lameness was much more pronounced than at others.

It occurred to me while watching the foal in its last illness that perhaps this was a case of colic from the presence of strongylus armatus in the mesenteric arteries, and that the lameness was associated with the same cause.

I took care, therefore, in making the *post-mortem*, to cut away the pillars and muscular part of the diaphragm, and to get intact the aorta and its branches beyond the renal arteries and the kidneys.

Post-mortem.—On opening the abdomen a small quantity of red-coloured serum was observed. The cæcum and colon were greatly congested in places and much thickened; the ileum, too, was dark-red in colour, and its mucous membrane œdematous and swollen. The kidneys, especially the right one, were much enlarged, and on section the medullary portion was intensely congested and black-red in colour. Of the branches of the mesenteric, the right division had its arteries almost obliterated by aneurisms, the walls being enormously thickened and containing thrombi in course of being organised. In many of the thrombi between the layers, of which they were made up, the strongyles were found quite readily. The numerous branches of the left division of the mesenteric artery had their coats also greatly thickened.

Here, then, was the explanation of the colic and the antecedent lameness. The interference with the blood supply to the intestines causing nutritive changes and semi-paralysis of their walls, leading to fæcal stasis and colic, while bits washed off from the thrombi in the aneurisms, forming embolic plugs in the arteries of the hind limbs, accounted for the lameness.

The foal was only six months old, and one would wonder that in so short a time such changes, with every appearance of chronicity, could have occurred in the vessels and in the intestinal wall.

CYSTIC TUMOUR OF THE PROSTATE GLAND IN A DOG.

BY W. R. DAVIS, M.R.C.V.S., NEW VETERINARY COLLEGE.

A LARGE mastiff, the property of an Edinburgh gentleman, was brought to the College on July 15th last for treatment. The history of the case was as follows:—

The dog was ten years old, and had been in the present owner's possession since it was a pup. It had never suffered from any illness until about May, when it was noticed that occasionally the dog would, when defecating, remain for a long time in the position to accomplish this act, and the nose would be held high in the air; it would strain and utter plaintive howls. When first observed, this would happen perhaps twice a week; soon it took place at shorter intervals, the howling becoming louder and the straining more violent. A "doggy" man, who was consulted, stated that the dog had piles, and this, too, was the opinion of the owner.

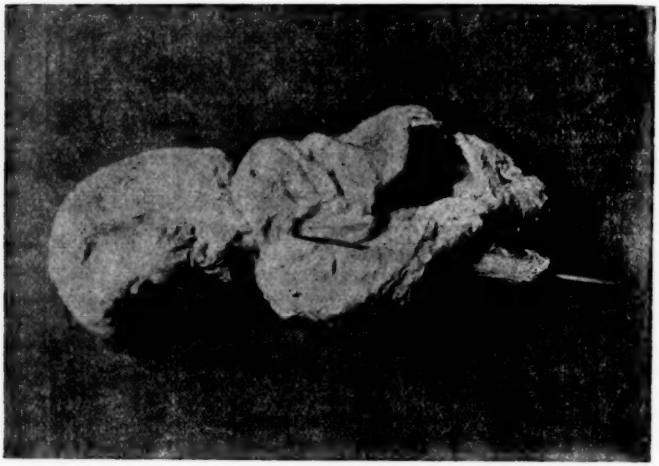
Under this supposition some treatment was adopted, but as no improvement took place, and as the cries of the creature were a source of alarm to the neighbours, the dog was brought to the College and left to be treated, and if nothing could be done to cure him, he was to be destroyed.

An enema of warm glycerine was followed by a copious dejection of perfectly normal fæces; there was no trace of blood. After defecating, the dog kept in position, and with its head up gave utterance to a series of prolonged but not very loud howls. Directly afterwards it walked round the yard and urinated two or three times, but instead of lifting the hind-leg in the customary manner, the patient sat down in the posture assumed by the bitch when passing urine.

The owner, who was still present, told me that this peculiarity had only been noticed since the commencement of the present trouble, previous to which the dog had always raised the leg when urinating. On passing the oiled finger into the rectum, the mucous membrane was found to be quite smooth, so that hæmorrhoids had evidently nothing to do with the symptoms. It seemed to me that the rectum was dilated; its walls were tense, as if drawn forwards. Deep in, the gut suddenly narrowed and curved to the right, while to the left a rounded mass could just be felt. The dog struggled very violently and persistently during these manœuvres. I informed the owner that I thought the dog had a tumour near the bladder, and that the interference was as much with passing of urine as with defecating. The

patient was left for further observation. Care was taken, by dieting and by occasional enemas, to keep the fæces soft, while plenty of exercise was given. At first, some improvement seemed to follow this treatment, but after three weeks it was decided to have the dog destroyed. This was done by injecting a drachm of Scheele's hydrocyanic acid up the nostril. (This is a very good way to poison dogs, as with a muzzle on it is sometimes difficult to get the liquid into the mouth; the animal is sooner dead and less acid is needed.)

On making a *post-mortem* examination, all the organs were found to be normal with the exception of the bladder and prostate. The latter was converted into a large rounded tumour. The normal contour of the gland was still retained



on the right side, while on the left side, where the solid part of the tumour was more developed, a large cyst was found. It was full of fluid.

Anteriorly it lay on the left side of and below the bladder, in the peritoneal cavity; while posteriorly it was related to the left side of the pelvis, and, surmounting the urethra, it was between that canal and the rectum, which was pushed towards the right by it.

The cyst was partially divided by in-growths from the walls into several incomplete chambers, and contained four-and-a-half ounces of viscid reddish-coloured fluid.

On microscopic examination of sections of the tumour, it was found to be the adenomatous form of hypertrophy of the prostate, and consisted, therefore, of an overgrowth of the glandular portion of the organ, with a scanty proportion of the fibro-muscular tissue.

Many of the gland-ducts were greatly dilated, and it is doubtless by a fusion of these dilated canals that the cyst was developed. The bladder and tumour weighed twelve ounces.

In the photograph it will be noticed that a sound is pushed through the urethra into the bladder, and that the solid part of the tumour has been cut across to show the passage of the sound. Above is seen a part of the cyst wall.

As the walls of the bladder were not much thickened, it is most likely that the pain arose from the passage of fæces after collecting beyond the portion of the rectum narrowed by the pressure of the cyst.

ECLAMPSIA IN A BITCH.

BY J. LAWRIE, NEW VETERINARY COLLEGE.

FOX-TERRIER BITCH brought to the infirmary, the messenger stating that it had picked up something and had been poisoned. The body was rigid, and the animal stood with its legs like props under it; hind and fore perfectly straight and stiff. On attempting to move, the stiffened legs refused to flex themselves; the animal fell and lay gasping and twitching all over, the eyeballs protruded and the pupils dilated. An emetic was promptly given (zinc. sulph. gr. xv. in 2 oz. of warm water), but it only brought up some fluid and mucus. Further enquiries now elicited the fact that the bitch was suckling seven pups, three weeks old. On examining her carefully, it was found that the pulse was about 150. The respirations would be 70 to 80 for a time, and then fall to 30. Temperature 102. The body was still very rigid, the mouth open, and the tongue protruded.

The diagnosis eclampsia was now made, and the patient was given a warm bath and chloral hydrate, gr. xv., which was repeated in two hours. She was well rubbed and put in a big bed of straw, and nearly buried in it. In six hours she was apparently all right, and is now suckling her family. I will not offer an opinion as to whether the mistaken diagnosis and consequent treatmant had anything to do with the happy issue. As a proof that members of the sister profession are

not always correct in their deductions from symptomatology, especially when they devote their cases to the domesticated animals, I may say that I recollect being asked to see a schipperka bitch which was suffering from the same disease —Eclampsia. The family doctor, who happened to be in the house, was shown the little sufferer, and made the diagnosis pneumonia. Here, too, the chloral treatment gave a good recovery in a few hours, to the great astonishment of the medico.

TEETH.—WHAT WE LEARN FROM THEM.

BY O. CHARNOCK BRADLEY.

"SHOW me a tooth, and I will tell you the structure and habits of its past owner," so said one of the greatest comparative anatomists that ever lived — Richard Owen. Whether this is to be taken as an elaborate statement or not we need not now enquire; it is sufficient for us to know that certain dental peculiarities are inseparable from certain anatomical characteristics, and consequently certain habits of life; that this is so needs no further proof than that afforded by an examination of the teeth of our domesticated animals. The most superficial observer will be prepared to admit that the teeth of the dog differ very materially in shape, size, and number from those of the ox and horse, and, if he be of an analytical turn of mind, that the pig has teeth with characteristics intermediate between those of the ox or horse and the dog. Further, on more careful examination and deeper thought, he will find that the general form of the teeth is adapted to dealing with a particular kind of food. If these things be observed and admitted by a mere on-looker, so to speak, then what will be revealed to the more acute senses and reasoning powers of a man of science, trained to observe and correlate details of the minutest kind?

The scientist, supposing that he knew nothing whatever of the anatomy, psychology, and physiology of the dog, will observe that the teeth of this animal are adapted to a diet which requires little, if any, mastication; he will, moreover, bring his anatomical knowledge to bear on the question, and remembering that the animal he has previously examined with teeth of a similar kind had a short and comparatively simple alimentary tract suited to the digestion and absorption of food of a highly nutritious nature, he will argue that this strange animal—the dog—the teeth of which he is now

examining, might very naturally be expected to indulge in carnivorous habits, and to have a digestive system built on the plan above suggested. Having arrived at this point, our scientist would argue that because this strange animal is a carnivora, therefore it would have certain other anatomical peculiarities inseparable from its carnivorous habits; for instance, its body and limbs would be so built that fleetness of foot would be ensured; the organs of vision, hearing and smell would also be well but delicately developed; all essential to the efficient hunting of its prey. From this reasoning, it would be possible to construct a model which would differ, little or much, from the true animal as the train of reasoning had been more or less accurate.

Though the above case has been entirely fanciful, yet it is not without an actual parallel. The models of extinct animals which we see in our museums have been constructed, to some extent, in this way, though teeth have not always formed a foundation to the edifice of reasoning. The palæontologist will tell us that his knowledge of extinct animals has been gathered from the hard portions of their bodies preserved or moulded in the rocks. The harder the structure the longer it would persist, and the more perfect the evidence left behind. Bones and teeth, therefore, being among the hardest tissues, would afford the truest present indications of their past form; tooth being a much harder and less perishable tissue than bone would persist longer and retain its form better than probably any other structure.

From this we see that fossil teeth teach us much of the animals which formerly inhabited this planet, of their modes of life, their food, and, consequently, of their environs and the influence they were likely to have upon their environs and fellow creatures.

From the past let us turn to the present, and try to discover the lessons taught us by the teeth of animals still existing. If we compare the teeth of the horse with those of its ancestor, the *Hipporion*, or the more remote one, the *Anchitherium*, we shall find numerous differences, both of shape, size, and number. The most instructive difference, however, I think will be that of number, the horse of the present day having fewer teeth than its ancestors. Every student of zoology is familiar with the magic formula, $\frac{3}{3}\frac{1}{1}\frac{4}{4}\frac{3}{3}$, by which is indicated the typical mammalian dentition as first shown by Owen, The horse sometimes, but not always, conforms to this formula. Most commonly he falls considerably short of it, owing to the inconstancy of the canines in

the female particularly, and the few occasions on which the 1st premolar is developed in either sex. This fact leads us on by natural steps to consider the future of teeth. We frequently hear the remark made—chiefly, perhaps, by the lay press, but also by the scientific writers—that teeth, especially in mammals, are showing a tendency to disappear. We know that this disappearance has become an actuality in the class *Aves*, as no known modern bird possesses dental appendages, though extinct birds undoubtedly had them, as evidenced by the fossil remains of the *Archeopteryx* and *Hesperornius*. When speaking of the future, there is always an enormous temptation to give the reins to fancy and imaginative creativeness, so that one must be guarded in prophecy as to the course likely to be taken by the teeth of generations to come. Let us, therefore, take as temperate a view as possible of the significance of the present edentulous condition of birds, and carefully weigh the evidence afforded by the condition of certain teeth in existing animals. The *Ornithorhynchus*—whose specific name, *Paradoxus*, teems with suggestiveness—affords us a peculiar example of the apparent disappearance of teeth in mammals. This creature was for a long time supposed to be entirely destitute of teeth, but within comparatively recent years, structures of an elementary odontoid character have been demonstrated; in this connection it is interesting to mention that in a fragmentary skeleton in the Edinburgh Museum of Science and Art, these rudimentary teeth have been found, but only since their existence had been demonstrated elsewhere. The horse, again, shows us an example of the suppression of teeth in the inconstancy of his first premolar, which, when present, is simple and somewhat conical, in this respect departing very considerably from the usual shape of premolars and molars in this animal; this simplicity of shape seems to be a return to a primitive type, which retrogression is looked upon by odontologists as the first symptom of suppression. The canines of the horse, again, are inconstant, being commonly absent in the female, so that this animal can only lay claim to 36 constant teeth instead of the 44 to which he is entitled. Man also refuses to be bound down to the conventional number, having usually only 32, and sometimes even fewer, as the last molar—known commonly as the "wisdom tooth"—is very erratic in its appearance, and when it does appear it is often much simpler in form than the molars which precede it. We are almost unconsciously led by these facts to the conclusion that in

some future age the time will arrive when mammals will attain to the edentulous condition birds acquired in prehistoric times.

The subject of the teeth of the past, the present, and the future, is one of great fascination, and also of great importance to the anatomist, zoologist, and palæontologist. Of the past we know but little, and yet that little grows as the rocks give forth their testimony; of the present our knowledge is increasing, but do we interpret the wonders of nature aright? Of the future, we can only speculate. Of all three the present offers most real interest and ground for argument but—"Science moves but slowly, slowly, creeping on from point to point.

A CASE OF CHOKING IN THE HORSE WITH CHOPPED FOOD.

BY W. G. SMITH, M.R.C.V.S., TRANENT, N.B.

ON the seventh of August last I was called upon by a travelling showman to proceed with him to his stable to see a horse that had been taken suddenly ill. The horse, he said, had just had some dry chop given him and had not been feeding five minutes when he commenced to cough and squeal. On arriving at the stable I told the owner the horse was choked, and on examination I found that the obstruction was not in the cervical part of œsophagus and must be either in the thoracic part or at the cardiac orifice of the stomach. I asked the owner to remove the horse to my own yard where I had every convenience. On his arrival I gave the horse one pint linseed oil with great trouble, the animal evincing great pain on every deglutition. On lowering the head after the administration of the oil, the oil flowed from both nostrils. I then asked the owner to give the animal a little walking exercise, but this gave no relief.

I told the owner on his return with the animal there was no chance of relief, unless I passed the probang and attempted to remove the obstruction by that means; to this he consented at once; I had the horse again taken into the yard, and determined to pass the probang while it was in the standing position, with the assistance of three men, the twitch, and the balling iron. The probang which was well oiled, passed gently into the throat, so that when he had swallowed it there was little or no pressure required until the obstruction was reached, then with slight steady pressure it entered the stomach. On removing the probang a little

oil and chopped straw passed through the nostrils. All the other symptoms having disappeared, I told the owner the horse was to have no food for a few hours and to give him a drink of water only if he would take it. When fed he was to have nothing but a thin bran mash. which treatment was to last for three days, and then to put him on to his regular food, but to be careful with chop in the future. The horse is now doing well.

There is nothing extraordinary in this case excepting that we do not see them often, as also the introduction of the probang in the standing position. The operation only lasted three or four minutes, and the probang used was the one I use in cattle practice.

PERFORATION OF THE THORAX (THORACOCENTESIS) IN CASES OF PLEURO-PNEUMONIA.

CONTRIBUTED TO THE *Recueil Vétérinaire* BY A. HUGUIER, VETERINARY SURGEON TO THE 29TH REGIMENT OF ARTILLERY.

WHEN the diagnosis of pleuro-pneumonia is quite clear and when we suspect the presence of fluid in the chest, we must try perforation without delay, whatever be the result which it gives. The chances of recovery in pleuro-pneumonia being infinitesimal, we must adopt every means that offers a hope of success. We subjoin a statement showing the history of the operation, its advantages, its dangers and the results which it has given in actual practice.

First, the historical aspect. At several meetings of the Académie de Médecine disputes have taken place between medical men and veterinary surgeons on the merits of the operation. One member accused it of causing in certain cases the transformation of simple pleurisy into purulent pleurisy. Another said "the frequency of purulent effusions from the pleura at the present day is due to this operation"; in his opinion we ought never to practise it unless as an extreme measure in cases of abundant effusion and intense dyspnœa. A third gentleman defended perforation energetically and, in support of his contention, gave a list of 180 perforations unattended by pyogenic complications. "With antiseptics," said he, "perforation never brings about purulence; when such a complication occurs it shows that we had to deal with a purulent liquid when we made our first punctures. This product did not betray to the naked eye the presence of pus, but a bacteriological examination would have given proof of the presence of the agents of suppuration."

In veterinary surgery this operation has been practised for a long time back by many eminent men, but, owing to ignorance of microbic doctrine, perforation of the thorax gave for a long time only unsatisfactry results. We hardly find in veterinary journals any accounts of cures of pleurisy by perforation till about 1889. We shall see presently the results given by this operation in veterinary surgery.

Secondly, the proper moment for the operation. This is a question which has stirred up many controversies. When ought we to practise perforation? What are the clinical signs which enable the practitioner to recognise the favourable moment for the adoption of this treatment, so as to ensure efficacy? Let us pass in review the opinions expressed by the most eminent surgeons. The general opinion is in favour of performing the operation when the pleurotic effusion is abundant, and when intense dyspnœa results from this phenomenon. Dieulafoy takes a different view, and says that dyspnœa is an untrustworthy sign and a deceptive guide. He has seen patients succumb very rapidly from pleurisy without any dyspnœa of long duration. He is, therefore, of opinion that in order to obtain useful results the operation must be performed at an early stage, before we have to deal with abundant effusion. He denies the efficacy of internal medicine in cases of pleurisy, and says that perforation ought to be performed when the effusion is considerable; it becomes urgent when there is dyspnœa. Hardy, comparing the statistics of to-day with those of twenty years ago, declares that there is no diminution in the mortality from pleurisy, and he, therefore, infers that perforation is not an advance. It is a matter of public notoriety that in the Paris hospitals perforation is performed, and repeated when the pleuritic liquid is abundant. Trasbot, Chuchu, Ribot, and Cadiot state that amongst animals the most efficacious agents for combating pleurisy are perforation of the thorax and blistering. Zundel declares that perforation of the pleura retards death but rarely cures, and ought to be adopted only in the last extremity. Trasbot advises us to operate when the effused liquid is in great quantity. Cadiot, in his work on pathology, says—with Friedberger and Froehner—that perforation is an operation of the highest importance, and is quite harmless when performed with antiseptics. These gentlemen give the following as indications of the necessity for its performance:—(*a*) When the quantity of the exudate is such that asphyxia is imminent, this is *indicatio vitalis;* (*b*) when exudation is simply abundant;

(*c*) when the exudation persists without any tendency to re-absorption; (*d*) in purulent or gangrenous pleurisy. Chuchu and Aureggio think that by puncturing early, we should perhaps have more chance of seeing the effusion dry up completely. We have seen a case of pleuro-pneumonia cured by two perforations performed as soon as pleuretic symptoms appeared. We think that perforation ought to be performed at an early stage for the following reasons:—The pleuretic liquid—which is very irritating, as it goes on increasing in quantity in the chest—becomes a constant cause of inflammation for the healthy parts of the pleura; the effect of inflammation—an exudation—becomes itself a cause, and this liquid, passing into the opposite pleural cavity, produces a double pleurisy impossible to check; if, on the one hand, by perforation, we remove this liquid as quickly as it is produced, and if, on the other hand, by powerful internal drugs we carry off the fluxus of blood, we may admit that the pleurisy is on the way to recovery. This very plausible theory brings us to the conclusion that early perforation of the thorax is a curative and a preventive of pleurisy. I will go farther and say that, in view of the harmlessness of such perforations, we ought to have recourse to them when we wish to make sure even of our diagnosis. All that we have said goes to prove that perforation, in order to be efficacious, must be performed at an early stage. When performed after the appearance of dyspnœa, it is no longer justified, for the morbid changes are too deep to allow us to think of curing them, and thus the operation, as Zundel says, may delay death but cannot prevent it.

Thirdly, the dangers of perforation of the thorax. The opponents of thoracocentesis use the following arguments as a basis for their theories:—(*a*) the rapid escape of the pleuretic liquid produces, they say, fatal syncope; (*b*) the air entering the cavity brings about likewise fatal accidents; (*c*) the introduction of the perforating instruments brings about purulence of the pleuretic liquid, because although the first puncture brings out a clear liquid, the second often produces a purulent liquid—a sure symptom of fatal complications.

These arguments are easily refuted. First, the too rapid escape of the pleuretic liquid is easily avoided. We make sure of the level of the liquid in the thorax; we puncture a little below this level; we withdraw only some ten or twelve pints of liquid, and then we stop the operation.

The lungs, forced back by the pleuretic liquid, regain gradually greater volume, and their functions are performed without apparent trouble. It is, of course, obvious that if we withdraw the whole of the effused liquid the lungs will not be able to regain their normal volume rapidly enough, and so syncope will ensue.

Second, the introduction of air is easily avoided if we employ the Reybard system, by means of a tube provided with an envelope of goldbeater's skin. Besides, if the air is introduced into the pleural cavity, there need not result any accident. M. Rousseau reports a case of a cure of pleurisy by repeated perforations, in the course of which a considerable inflow of air to the pleural cavity took place. The patient was in no way incommoded thereby. We have had the opportunity of seeing several cases of the same kind, in which there was a rapid and considerable inflow of air to the thorax without any accident resulting therefrom.

Third, if the trocar be dipped in some antiseptic, and the skin of the horse at the place of puncture and the hands of the operator be treated likewise with antiseptic liquid, there ought to be no danger of the penetration into the patient's body of the microbes of suppuration. The employment of the Dieulafoy and Potain aspirator removes all the dangers before mentioned, and allows us to operate without fear, and to repeat the operation.

With regard to the results of the operation, few cases of the cure of pleurisy by perforation have been recorded. This is owing, as I have already said, to the fact that the operation is performed too late or under unsuitable conditions. The following cases, however, show undeniably the importance and usefulness of the operation:—(1) Horse sent to hospital, 9th March, 1889, suffering from pneumonia; on 12th, complication with pleurisy; on 13th, perforation gives two litres (3½ pints) of yellowish (microscopically) purulent liquid; on 14th, second perforation, with same result; on 15th, third perforation gives 2½ pints; horse convalescent on 20th March. (2) Horse sent to hospital, 6th April, 1891, with chest-disease; pleurisy diagnosed 11th; on 12th, perforation (on right side) gives 16 pints greenish liquid, on 13th 2½ pints, on 14th 1¾ pints, on 15th 5 pints of clearer liquid, on 20th 12 pints (from left side perforation), on 22nd 9 pints; there were in all eight perforations and these produced 58 pints of liquid; the horse left cured on 13th June. (3) Horse sent to hospital, 24th February, 1890, for chest-disease; pleurisy diagnosed on 27th; on 2nd March, perforation on right side

gives 14 pints, on 4th (left side) 19 pints, on 7th (right side) 12 pints; a fourth puncture, made a few days later, gave no result; horse cured in a month. (4) Riband, in 1891, examined a mare suffering from chest-disease and diagnosed pleurisy; first puncture (on right side) gives 21 pints, second (on left side) gives 12 pints, third (right) 14 pints, fourth 7 pints, fifth $1\frac{3}{4}$ pints; horse cured in about a month. (5.) Horse sent to hospital on 14th February, for pneumonia; pleurisy appears on 20th; on 21st, perforation on right side gives half-a-pint of liquid, and on 22nd, $\frac{1}{3}$ pint; horse sent away cured in a month. In this last case, we may believe that perforation being early performed, arrested the disease, and prevented the formation of a more abundant pleuretic effusion. M. Chuchu states that he has cured some cases of pleurisy by perforation of the thorax. From the foregoing, it is reasonable to conclude that there is much to hope for from perforation in the treatment of pleurisy complicated with pneumonia. But, I repeat, we must operate early if we wish to obtain any definite result.

VETERINARY NOTES FROM SOUTH AMERICA.

The Dishorning of Cattle.

THE removal of horns from cattle intended for exportation is now the order of the day in Argentina, and a new profession has been added to the former list—the Dishorner. We know an Englishman whose sole occupation it is to go from farm to farm performing this operation with his gleaming saws. We have been consulted by a great number of clients as to the utility of the operation and the best way of performing it, and our answer to the former question has always been that we think dishorning from every point of view most desirable. Horns were given by nature to cattle as a means of defence, but when men domesticated cattle and so undertook their protection, these weapons were no longer of any use and they ought to be regarded as hindrances and drawbacks. The object which the breeder has in view is the suppression of everything that is secondary and unimportant—and of course whatever is useless—in the animal economy, and when we consider the drain upon the system caused by horn-production we must see that the result is a serious loss and a deduction from the quantity of flesh that ought to be produced. In the United States dishorning has been practised for several years on a great scale, not only on animals intended

for exportation but on those for the home market as well. Many American writers maintain that the dishorning gives a more delicious flavour to the flesh of animals so treated.

With regard to the second question, we are decidedly of opinion that, in order to obtain the best results and greatest advantages, dishorning ought to be performed on calves. The sole advantage to be gained by cutting off the horns of animals two years old and upwards is the facilitation of transport and shipment. The most suitable time for the operation in this country, taking into account the usual conditions of cattle breeding here, is the time of castration; the performance of both operations at the same time offers advantages and presents no drawbacks. The methods at present employed are three in number, namely (*a*) amputation by means of a saw or other instrument; (*b*) cauterisation with fire; (*c*) application of chemical caustics. In the case of adult animals, only the first method can be employed. The Englishman who has now devoted his life to the profession of dishorner tells us that he prefers the butcher's saw, and he maintains that with this saw the work is easier and the hæmorrhage less abundant. It has been also affirmed, but we think it is nonsense, that the nearer the base the horn is cut the less hæmorrhage is there. In the majority of cases nothing is applied to the wound resulting from the operation; but we think some hemastatic ought to be used, which is at the same time cheap and antiseptic. Tar and alum and other preparations, such as lysol and acaroina, are favourable to rapid cicatrization and prevent infection of the wound. For calves cauterization by fire is the most rational and efficacious proceeding. Some of our surgeons use a cautery in the shape of a bell which slips over the little growing horn and burns it at its base, destroying the *membrana keratogena*. Cauterization having been performed, the horn is easily removed. To complete the operation the point of the bone is cut off with a special pair of scissors; in this process there is no danger and no complication. We have constructed a cautery for ourselves in the shape of a double bell, one larger than the other, and the two united by their vertex. This instrument has the advantage of uniting two instruments in one, and the operator can begin the operation with the little one and end it with the big, when the conformation or size of the horn requires it, and he does not need to turn about and look for another cautery in the event of his not having taken the one which fitted the size of the horn.

The third method is likewise applicable only to calves and

has for its object the destruction of the *membrana keratogena*. The substance recommended for this purpose are caustic potash and nitric acid. As a rule we do not recommend liquid caustics; it is difficult to handle them in the field, the vessels containing them are awkward and often fragile, their transport on horseback or otherwise is not free from danger. Besides all this, their use demands a certain amount of skill; it is important to measure the quantity carefully and neither give too much nor too little, if a good result is to be obtained; in fact they cause a greater loss of time than the other methods. Then there is the possibility that the animal in its struggles may get some of the liquid in its eye or some other delicate part. We therefore give the preference to dishorning by cautery.—*La Revista Veterinaria.*

Tuberculin in Argentina.

The employment of tuberculin for the diagnosis of tuberculosis is making rapid progress in Argentina, and is helping to prevent the spread of one of the most formidable of epizootics. The list of intelligent and far-seeing breeders who are subjecting their stock to the test of the Koch lymph is gradually increasing, and there are many among them who have sacrificed great numbers of their animals which showed, by reacting to the tuberculin, the presence of tuberculous lesions. We congratulate most heartily those progressive stock-owners who, by submitting to a present sacrifice, have shown their care for the future of the country, and have willingly suffered losses when they might, through the absence of proper police regulations, have sent their diseased animals to the auction sales, and obtained good prices for them.—*La Revista Veterinaria.*

False Intestinal Tuberculosis—Nodules of Parasitic Origin.

In the cattle slaughtered at the Buenos Aires abattoir there is frequently noticed an intestinal lesion which may easily be mistaken for one of tuberculous origin. The small intestine is the favourite seat of the lesion, and here it may be seen sometimes in a small portion of the intestine, sometimes throughout its entire length. The lesion consists in nodules of a size varying between a canary-seed and a chick-pea. In some places there is seen above the nodule a red spot, hollowed out as if the mucous membrane were wanting at that spot. If we squeeze the nodule at its base, the contents come out to the intestine. These nodules are submucous. Some are situated in the peritoneal part, where

they look like small pearls. When cut, they give forth a white or yellowish caseous substance, but sometimes this is dark in colour, sometimes greenish. Microscopic examination demonstrates numerous leucocytes, a great many micro-organisms, and a parasite in the embryo or larva state, generally one to each nodule. This parasite is a nematode, of the family of strongylidæ and order of sclerostomidæ. Its body is filiform with little transverse streaks 1 to 4 millimètres long and about ·1 millimètre thick. Its anterior extremity, thicker than the posterior, has a mouth shaped like a funnel, which is continued into a thick œsophagus with an œsophagic bulb at its junction with the intestine. (This intestine is straight, and terminates posteriorly in the base of a thin prolongation.) No developed genital organs are to be seen. The nodules which lodge this parasite contain very hard calcareous granulations. Sections of these nodules placed in alcohol or set in celluline and coloured with hematoxyline and eosine show the normal mucosity; sometimes infiltrations of embryonary cells are seen in front of the nodule. When the nodule is found situated between the mucous membrane and the muscular tunic, the conjunctive tissue which exists there normally becomes condensed all round the nodule and forms a species of cyst, in the interior of which numerous leucocytes are to be seen; in the centre is seen the section of the parasite, and all round it a sort of thick wrapping, which in the sections was tinged with the eosine. This wrapping is doubtless nothing more than a membranous cover which the parasite in one of its transitions threw off in the interior of the nodule. A case analogous to that which we quote is mentioned by Neumann. He found under the intact mucous membrane of the intestine of a bullock, in which the other organs were healthy, some 450 nodules, of a size varying from a pin's head to a chick-pea. The majority of them had undergone caseous degeneration; all were spherical, perfectly marked out, and composed of resisting fibrous tissue. In each one of them was found an undetermined nematode or, more properly speaking, an embryo 1 millimètre in length, supplied with conical cephalic papillæ. "These were," says Neumann, "probably embryos or larvæ of strongylidæ."

The larva of the parasite which occupies us at present certainly traverses the intestinal mucous membrane and lodges in the sub-mucous conjunctive tissue, where it develops itself. When the moment arrives for entering on another phase of its evolution, it leaves this abode and goes to live as

an adult in the intestine. We have not been able to find this parasite sexually developed, although we have sought eagerly for indications.—F. SIVORI in *La Revista Veterinaria.*

Editorial.

AS OTHERS SEE US.

A RETROSPECT of the proceedings at the various Medical and Sanitary Association Meetings, that have been held throughout the country during the past educational vacation, yields evidence that a certain section of the medical profession has an extremely poor opinion of veterinary surgeons. Some of these medical gentlemen appear to consider that in virtue of their positions as public health officers they are privileged to throw broadcast, statements that tend to injure the members of their sister profession in the minds of the public.

That we should be assailed from such a source, and in so public a manner, demands from us a scrutiny in regard to the truth or otherwise of these allegations so detrimental to our professional interests and character, and into the motives that prompt their utterance.

On the score of incompetence, chief among our accusers is the medical officer of health for Glasgow. It will be fresh in the memories of our readers that a few months ago a proposal to amend a Public Health Bill for Scotland, then before a House of Lords Committee, emanated from the Public Health department of the corporation of that city. The *ipsissima verba* of this precious amendment that refer to us were, "the proposal in the Bill to make the inspection of cattle by medical officers contingent on the presence of a veterinary surgeon, seems to have no justification either in necessity or expediency," and again "it would be difficult, if not impossible, for the medical officers in many counties in Scotland, to find a properly qualified veterinary surgeon." Although the Bill has not yet become law, it is gratifying to know that the Committee refused to entertain these recommendations, both insulting and injurious to us, and threw them out. We owe a great debt of gratitude to Mr. J. F. Simpson, the late President of the R.C.V.S., for the active and effectual steps taken by him to expose their misleading nature—their actual falsity—to the members of the Parliamentary Committee. A remarkable feature of this pro-

posed amendment was the affected zeal *pro bono publico* directed against the employment of veterinarians, as it extended far beyond Glasgow to many of the counties in Scotland. But this large-minded zeal was again to be publicly manifested from the same source when opportunity was afforded, and on September 3rd, at the Sanitary Congress held at Dumfries, a paper was read by Dr. Russell, Medical Officer of Health for Glasgow, on Tuberculosis, which we give in full at page 269.

Our readers will gather from its perusal an admission that he represents a sanitary authority that has adopted a policy of meat and milk inspection, very distasteful to each and all of the private interests concerned. He proceeds (and very sensibly, too,) to express the opinion that the viscera of all animals slaughtered for food purposes should be subjected to examination before the meat is offered for public consumption.

He omits, however, to say by whom this inspection should be made, merely referring in a vague way to the necessity the physiologist and the pathologist experience of obtaining *post-mortem* examinations of internal organs before they can pronounce judgment as to the soundness of the whole animal. Hear, on this point, Councillor James Willock, of the Glasgow Corporation, at the Newcastle Sanitary Congress: "I have to say our Corporation Meat Inspector is an ordinary policeman, and that any more competent professional examination of meat has to be done by the sanitary authorities *after* it leaves the market."

Dr. Russell next goes on to quote a case (in which we have only his side of the story), implicating a veterinary surgeon in connection with a consignment of two rumps of unsound beef from Forfar to Glasgow, and this incident is seemingly brought forward by him as a justification for the wholesale condemnation of our profession, which he couches in these words, "It is startling to observe what veterinary practitioners will do." In this contemptuous and impertinent fashion our profession is disposed of! Although we have every reason to believe that it is not given to all medical practitioners to possess the special qualifications necessary in Dr. Russell's position, we would never dream of implying they were collectively an ignorant and useless class of men. After all, we think we have little to fear from a self-constituted judge whose conduct from first to last carries with it a strong suspicion of mean animosity and prejudice, and whose ways are so very peculiar.

The important meetings at Carlisle and Newcastle-on-Tyne were also characterised by the prominence given to tuber-

culosis as a subject of discussion. At the former our profession was not disparaged, but on the contrary, was spoken of as an essential part of the machinery to be utilised in the much to be desired suppression of the disease among dairy cows and cattle destined for food. The Sanitary Congress at Newcastle furnished an opportunity to certain medical officers of health to air their adverse opinion of our professional acquirements, and we are pleased to note that our esteemed *confrère*, Mr. W. Hunting, was there to do battle for us. His valuable paper and remarks were on a high level, befitting the occasion creditable to himself and reflecting credit on the profession of which he is so conspicuous an ornament.

To defend one's self from attack is a natural impulse; it it would be unwise, besides, to treat with indifference remarks directed against our profession, or submit tamely to them without protest. Plain and pointed language has been applied to us, and language of a like kind shall be given in return.

In the interests of the consumer (his pet expression) one carping critic justifies to his audience the exclusion of the veterinary surgeon from public meat and milk inspection. Can such a plea be possibly admitted? Others declare that his lack of pathological knowledge unfits him for the inspection of carcases, and even of live cattle, and in the same breath they extol the capabilities of butchers, policemen, etc., for that duty. A *reductio ad absurdum*, indeed. But to turn from ourselves to those medical officers of health who give us so much studied but hurtful attention. Are their motives none but the purest and noblest when they endeavour to keep in their own hands, aided by uneducated men only, the conservation of the public health? Can they, combined, pretend to have an amount of knowledge of comparative pathology and morbid anatomy equal to that possessed by a qualified veterinarian? Does the medical man presume that because he has (or should have) a knowledge of the human body, the morbid appearances in the carcases of beasts are more readily detected by him than by the practitioner whose life-work has been their study and the treatment of the diseases that cause them?

To comment further on the great advance in veterinary education, on public health appointments and their usurpation, besides other minor points bearing on the present position of the veterinary profession, at any length, would be tedious as a twice-told tale. Fortunately, however, we are not without friends, although we have enemies. The eulogy

publicly bestowed on us at the Newcastle Congress by the distinguished scientist, Dr. German Sims Woodhead, also an examiner on pathology and bacteriology for the R.C.V.S., is a testimony to our professional value that sweeps aside the antagonistic dross of prejudiced, interested, or ignorant parties. Two public bodies also—the Midlothian County Council and the Edinburgh Chamber of Commerce—have recently, in formulating a scheme for meat inspection in counties, made veterinary co-operation the *sine quâ non* of the whole project. Encouraging signs come from other quarters; and looking back to days not long past, we can see to-day a great change for the better in our professional and social status, notwithstanding many obstacles to our progress of late that have given us much concern. We feel confident that the measure of our success is not yet full, but regret that in the meantime the duty has been forced upon us to resent these aspersions on our fair fame. Let there be no faltering or faintheartedness in our conjoint efforts to raise our profession; the goal we aim at will then with certainty be reached.

Proceedings of Veterinary Medical Societies, etc.

CONGRESS OF THE SANITARY ASSOCIATION OF SCOTLAND.

THE twenty-second annual congress of the Sanitary Association of Scotland was held on September 3rd and 4th, in the Town Hall, Dumfries.

Tuberculosis.

Dr. RUSSELL, Glasgow, as president, proceeded with his address, the subject of which was "Tuberculosis." He said it was the question of the day, and there could be no doubt that the current agitation among those who bred, fed, and sold cattle destined for human food was one of the manifestations of the interference of the modern doctrine of tuberculosis with the material interests of classes of men. He had nothing to say in deprecation of the agitation of the question of meat inspection, but every party in the discussion spoke from his point of view. He was more or less a special pleader. There was no disparagement to anybody. The farmer wished to pay his rent, the landlord wished to get it; the meat salesman desired as big a commission as he could, and the butcher saw a certain meat confiscated which he could have sold. In the matter of meat inspection, the sanitary authorities spoke from the point of view of the consumer. They had no private interest whatever to serve. He represented a sanitary authority which had the misfortune to have adopted a policy of advocating views both as to meat and milk inspection which were very distasteful to each and all of the private interests concerned. He had come to think that Glasgow occupied in the suspicions of some gentlemen in a small way much the same position as Lord Salisbury did in the dreams of the statesmen of Europe. He was not concerned to rebut those charges on behalf of Glasgow. Glasgow represented the interests of the consumer. Since 1882 it

had in those interests shaped out a definite policy with reference to meat inspection. It had successfully defended and enforced it in the law courts. It had accumulated information in support of it by deputations sent over the principal markets of Great Britain and the Continent. It had incorporated it in local Acts, and being satisfied with its policy, intended to stick to it. It had occurred to him that he could not have a better opportunity of educating the consumer as to the necessities of the conditions under which meat inspection fell to be carried out than under the auspices of the Sanitary Association of Scotland, and on the occasion afforded him by their kindness in elevating him to the position of their president, It would be agreed that all butcher meat, at some period between the time when the animal passed alive into the hands of the butcher and the time when the meat derived from it was distributed, ought to be inspected and passed by a competent public inspector. When could an inspection be most effectively made? It should be at the place and time of slaughter. If an animal was not inspected at the time of slaughter, but came for the first time under inspection as dead meat, whether in whole carcase or in parts, the whole risk was taken by the consumer, and all the chances were in favour of the person who submitted the carcase. The physiologist and pathologist never lost sight of the fact that the portion of meat was part of a living animal, that if the animal was diseased in any part then every part was diseased. The physiologist and pathologist said—"Show us the animal when it is alive, and its whole organs and parts when it has been slaughtered, and we will pronounce judgment on the whole soundness of the whole animal." The butcher said—"Allow me to kill the animal and dress the carcase, and then I shall draw aside the curtain and admit you to the contemplations of a work of art." So thoroughly artificial was the butcher's conception of the structure and constitution of a carcase that he would submit it in detachments. In dressing an animal the butcher removed from the body the parts most likely to contain evidences of disease. Without the viscera it was impossible to tell what disease had seized the animal. He should like to see what the professor of pathology in any university would say of a human body deprived of its head and all its viscera. Could he tell of what disease the person had died? Every carcase dressed in the ordinary way, and then submitted to inspection, was exactly in the same position, only the problem was more puzzling in the animal, because veterinary surgeons did not allow their patients to die. It was an article in the creed of every butcher that a carcase thus dressed ought to be taken and judged on its merits, and that it contained within its dimensions all the information which could be reasonably asked. Over the country there were men who went under the name of the "carrion butchers." He might be even more appropriately styled the "salvage butcher," for in all misfortunes in the shape of accident or disease which befel live stock, he turned up with his offer to take the carcase and do the best he could for the owner, or pay a few shillings for it and do the best he could for himself. The more reckless of these gentlemen tried to reach the low-class shops in the towns clandestinely. There, just as the stolen plate was cast into the melting-pot, the smuggled carcase was speedily boned and minced. But if they knew of a market where their wares could be submitted to inspection without the risk of a fine or imprisonment in case of detection, they willingly faced the arbitrament. If the carcase were seized, they lost nothing but the carriage, but if it passed, the profit was considerable. Dr. George Fleming held that the animal should be examined before being killed. The Commissioners appointed to inquire into the effect of food derived from tuberculous animals on human health, found that though their scientific and practical witnesses differed as to the treatment that a tuberculous carcase ought to receive when detected, they were agreed in this opinion. The president of the Glasgow United Fleshers'

Society in his evidence said—"It would be very difficult in any case to tell from dressed carcases what the original condition of the animals was, or whether they were infected with tuberculosis or not." Then there was but one voice from veterinary experts, medical experts, Royal Commissioners, and the intelligent and fair-minded butcher, that whatever be the principle adopted in adjudicating upon the destination of the flesh of a tuberculous animal, it must rest upon a full knowledge of the facts, and that could not be obtained from a dressed carcase, and could only be obtained with certainty in the slaughter-house. He had been speaking in the interests of the consumer, for the men who ate the meat had the most serious interest of all. It was only at the time and place of slaughter that the secrets which so gravely touched the interests of the consumer were fully revealed. He, therefore, advocated the abolition of private slaughter-houses for public slaughter-houses, and at these there should be an efficient system of inspection. At the recent conference of local authorities on the inspection of dead meat, held in Edinburgh, at which Glasgow, by the way, was not represented, the chairman said that what they sought after was a clearing-house, so that a legitimate mode of inspecting carcases and sound meat should be opened up. There was a case, however, which had always his sympathy; it was that of the man who bought a good-looking animal at a fair price in the public market, and, on driving it to the public slaughter-house, found in ten minutes that his purchase was no more than its value for boiling down. That was a case of pure misfortune. He had no sympathy whatever for the pets of the Edinburgh conference. In these clearing houses no inconsiderable proportion of the total meat submitted would be dubious rubbish, and in every case the unlucky consumer would have the whole risk, for the main object of the suggestion of the conference was to abolish the risk of prosecution. The worst that could follow a seizure in a clearing house would be the confiscation of the meat. In the absence of a system of public slaughter-houses with efficient inspection over the country the best method of dealing with the dead meat trade was an inspection by a staff of experienced officers who watched the railway stations, wharves, carriers' quarters, &c., and intercepted lorries and suspicious looking butcher carts on the street, and who could be sent to the country to interview the owner, see the butcher who had slaughtered the animal, the veterinary surgeon who had attended it, and otherwise get up all the information necessary for a prosecution if the circumstances required it. That was the system of controlling the dead meat trade which had been pursued in Glasgow since under their 1890 Police (Amendment) Act they obtained enlarged powers of seizure and prosecution. In the course of a history of the experiences of the sanitary authorities in respect to meat inspection in Glasgow, Dr. Russell said one of the lines of defence was labelling the consignment "for inspection." The first case seized was the carcase of a cow which was found to have died of puerperal fever. Stipendiary Gemmell said something more was required than a label marked "for inspection." The accused should have intimated to the consignee the whole circumstances connected with the death of the cow, and said that the carcase was sent on specially to see whether there was really any ground for allowing it to be sold for human food. The last ditch in the contest with the dead meat trade was inspection and certification by a veterinary surgeon, prior to despatch. It was occasionally found that the consigner—usually a farmer—had been advised by the veterinary practitioner in attendance, in which case the ends of justice seemed to be satisfied by the surrender of the carcase. It was startling, however, to observe what veterinary practitioners would do. There was, for instance, the case of two rumps of beef sent from Forfarshire, the remainder of the carcase and viscera being buried in the farmer's garden. The case was reported to the Fiscal, but on account of the

defendant's illness a pledge was accepted and forfeited. Just one word as to the effect of the detective system on the meat supply of Glasgow. Nothing showed this better than the decrease in the number of seizures. Whereas at the outset these were numerous, and the inspectors were constantly on the trail following up their seizures to the consignees in the country, now a seizure was a rare event. Weeks might pass without a find among the hundreds of consignments overhauled. All over the country Glasgow used to be looked upon as a promising market for the salvage of the farmer's casualties and the speculations of the "carrion butcher." Now it was everywhere known as the place to be avoided. Even the character of the rare cases investigated was different. They were generally consignments made by farmers in remote parts of the country without any attempt at concealment by special dressing, following the traditions of their calling more in thoughtlessness and ignorance than with criminal intent. The ends of justice were met by the surrender of the carcase and a warning not to do it again. The combined result was that meat cases, instead of being called in court every other day, were now the rarest of events. In conclusion, Dr. Russell wished to set forth his main thesis that no matter how they organised their system of meat inspection; no matter by what principles they were guided in the disposal of the abnormal meat when they had detected and detained it; whether they thought the flesh of an animal suffering from this disease or from that, was wholesome or unwholesome; whether they stamped or did not stamp; whether they adopted the German Freibank or the British dipping tank and digester; whether they went in for the "clearing-house" and plenary absolution for the "class of men who took the risk of selling in towns," or the detective system and criminal prosecution, as regards the interests of the consumer, the inspection of dead meat was only what was vulgarly called, "Making the best of a bad job." In proof that it was so, he had culled evidence from every quarter—scientific and practical. It was as indispensable to thoroughly efficient meat inspection that they should first see the animal slaughtered, as it was in the estimation of Meg Dods to the preparation of hare soup, that you should first catch your hare. In the course of the address, he had unavoidably touched upon many matters of controversy which were quite worthy of separate treatment, but he begged the congress not to allow their minds to be shunted off from the main thesis to any of these side issues. As to the practical application of this thesis, assuming it to be established, whether by general legislation or local administration, that must be left to time to settle after the slow fashion of this old country. Meanwhile, however, and now it dictated to them on behalf of the consumer an attitude towards the home dead meat trade as they know it in their towns, at least of suspicion if not of active hostility, and, above all things, not of credulous confidence.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

A MEETING was held in the Religious Institute Rooms, Buchanan Street, Glasgow, on September 11th. Dr. Jas. McJ. McCall, President, in the chair.

The following members and visitors were present, viz., Professor Dewar, Dick Veterinary College, and Mr. P. Moir, Edinburgh, Messrs. W. Anderson, J. Wilson, G. Frew, W. Peddie, Jas. Weir, R. Mitchell, Allan Blue, J. B. Macqueen, Bishop Robt. Mitchell, of Glasgow, Messrs. D. Allan Busby, J. Brown, Glasgow Veterinary College, Mr. McIlwraith, Milngavie, J. Taylor, Cathkin, Wm. Brownlie, Coatbridge, W. B. Wyse, Douglas Kilmarnock, Mr. J. McCall, student, and H. Begg, East Kilbride.

Letters and telegrams regretting inability to attend were announced from

Mr. McIntosh, Dumfries; Mr. Farquhar, Riccarton; Mr. Malcolm, Birmingham; Mr. Green, Irvine and Mr. McL. Young, of Dundee.

The Minutes having been read and approved of,

Mr. W. ANDERSON, Glasgow, moved that a committee be appointed to transact the business of the Association.

The motion was seconded by the SECRETARY and unanimously agreed to.

Inaugural Address by the President, including Remarks on Mallein.

Members of the West of Scotland Veterinary Medical Association and Gentlemen,—It is an old saying, and possibly a true one, that "a new broom sweeps clean," but it is also an undoubted fact that, if there is very little to sweep, the "old" one must have answered the purpose remarkably well.

I do not wish to escape from the tasks which pertain unto the new broom as represented by me your recently-elected president; but I feel it my duty, before entering upon the sweeping process, to recognise the amount of indebtedness which I owe to Mr. Campbell, my predecessor, for the very able and masterly manner in which he kept this Association together, and for the great interest which he always has taken in it—in fact, so well has he done the sweeping himself that he has enabled me to drop into his place without requiring to soil even the tips of my fingers. Gentlemen, I would have liked to have given you a short account of the doings of this Association since its earliest days, but unfortunately the old minute book has been missing for more than sixteen years, and I can find no satisfactory data to go upon. This, however, I can tell you, namely, that the West of Scotland Veterinary Medical Association was the first of its kind to emerge into the light of day, and when we consider the immense number which have followed in its footsteps, and the good which these associations undoubtedly do, and have done, then we can, one and all, congratulate ourselves that we are members of an association which was the pioneer of one of the greatest and most useful movements pertaining to veterinary science.

Our Association, undoubtedly, has had a chequered career, for we learn that after its original appearance its growth was rapid and its strength great; but, unfortunately, a deadly disease attacked it, with the result that the sap in its veins became stagnant, and a deep sleep, almost approaching unto death, overtook it and left it for years in a state of extreme debility and inertia.

"Nature's kind restorer" (?) at last was shaken off, and we find a wonderful and complete recovery setting in, which was confirmed by a meeting held within the walls of the Glasgow Veterinary College on the afternoon of the 31st of May, 1880.

From that time until now, with the exception of an occasional relapse, the society has progressed steadily onwards, and I am certain that, with the cordial support of the members, both present and absent, such an occurrence as a relapse will be an unheard-of quantity, and this society will eventually occupy the proud position which the history of its origin entitles it to do.

For my part, I thank you one and all for the great honour and privilege which you have conferred upon me in electing me your president. I do not know that I have done anything to deserve this honour, but I do assure you that the interests of the Association will be very dear to me, and if I can do anything towards its advancement and improvement, I will consider myself fortunate indeed.

I now propose directing your attention for a short time towards the subject of "Mallein and its Value as a Diagnostic Agent in Suspected Glanders."

This is a subject which is well worthy of the closest attention, and is of great importance, not only to the veterinary practitioner and his clients, but also to the public at large, for, when we consider the gruesome spectacle of a poor animal suffering from an attack of the vile disease called glanders, and

when we further recognise the risk of infection and almost certain death which follows upon the accidental inoculation of the human subject, then I say, gentlemen, no precautions nor preventative measures are too great or should be overlooked in trying to arrive at a method which, if properly carried out, would reduce even the possibility of risk to one of our fellow-creatures: and this we can arrive at by the judicious use of mallein.

Mallein, as you are probably aware, is a modified product of the Bacillus mallei, the organism recognised as the causative agent of glanders. It is prepared in the following manner:—We first obtain a pure culture of the Bacillus mallei and inoculate a flask of bouillon plus glycerine 4 per cent. with it. This we put into the incubator and leave for from 15 to 20 days. We then remove it, filter and sterilise, and concentrate the solution by evaporation over a water bath until it is reduced to one-tenth of its original bulk. The concentrated solution now remains as a clear brownish, syrupy-like liquid, called "mallein concentrated," which will keep for an indefinite period if deprived of light and kept in a cool place.

In practice the strong solution is usually diluted with ten times its volume of a ½ per cent. solution of carbolic acid, and is now ready for use, going under the name of *Malléine diluée.*

Method which may be adopted in Testing a Stud of Horses.

Take, for example, a contractor's stock, numbering ninety horses, and you will find the following one of the most practicable and least objectionable:—

Preliminary Steps.

Having arranged with your client to have the stud tested, you divide them into three lots of thirty, select one lot for the first inoculation, and number them off carefully. Visit the stables and take the temperature of each horse in the lot on Thursday and Friday evening; then on Saturday night take the temperatures for the third time, and inoculate the suitable subjects, commencing about 10 p.m.

By a suitable subject we mean one whose temperature has been normal and regular on all three occasions when the temperature was taken. "*None other must be inoculated if we wish to arrive at certain and satisfactory results.*"

Inoculation.

The instruments required are (*a*) Malléine Diluée, preferably freshly received from the Pasteur Institute, (*b*) a Graduated Syringe, thoroughly antiseptic, (*c*) a pair of Horse Clippers, (*d*) a Bottle, containing a ½ oz. solution of carbolic acid in water.

We now clip the hair off a portion of the neck, about six inches square, and situated about one foot in front of the shoulder, and midway between the upper and lower part of the neck. We next thoroughly cleanse the clipped portion of skin with the solution of carbolic acid, and immediately thereafter carefully inject hypodermically 2½ cubic centimetres, or in English measurement, 45 minims of the Malléine Diluée.

This operation is performed on all the suitable subjects. We then leave the stables and return at 6 a.m. on the Sunday morning, when we take the temperature of each of the inoculated animals, and keep a careful note of it.

At this time we may notice *local* and *general* phenomena affecting our patients.

Local.—A swelling at place of inoculation, which is usually hot and painful, but varies very much in size, sometimes being scarcely noticeable, and in other cases, large and well-marked. However, in almost all cases it is clear of the place where the collar would rest.

The General Phenomena are dulness, staring coat and rigors. If the horse, however, is free from glanders, neither local nor general phenomena are, as a rule, present to any extent. If affected, on the other hand, *both* phenomena may be very well marked.

The local swelling usually disappears within a few days, and if not very great, does not prevent the animal from being put to work. We next take the temperature at 8 a.m., then at 10 a.m., and, lastly, at 12 noon, that is to say, at the eighth, tenth, twelfth and fourteenth hour after inoculation.

These we carefully notify and transfer on to a large sheet, in the form of a Temperature Chart, which shows us at a glance the existing temperature of each horse at the various hours specified on the chart.

These conclude the points which require to be taken into consideration with regard to the inoculation, and as they are finished on the Sunday, the horses can resume their work on Monday morning.

On succeeding Saturdays and with similar precautions we inoculate the suitable subjects in the other two lots.

Sometimes unsuitability is due to a slight sore thoat which is associated with a fluctuation of temperature, and may pass off in the course of a few days.

Value of Temperature Chart.

If a horse which has been inoculated shows little or no variation in his temperature at each time of taking it since the commencement of the investigation, or at any rate the variation does not amount to more than a degree and a-half, we consider that horse *free* from glanders. If the variation as seen on the chart shows an elevation of from one and a-half to two degrees at any time of taking it after the inoculation we consider that horse *suspicious;* and if the elevation is more than two degrees we consider that horse *affected with glanders* according to the test.

It is a noticeable point that the temperature of an affected animal reaches its maximum usually about the twelfth hour after inoculation, and after that, commences gradually to decrease until about the twenty-fourth, when it may reach the normal.

Further measures to be adopted.

If the owner will consent, even though the animal shows not the slightest clinical symptom which would point to the existence of glanders, I would have every horse slaughtered whose temperature had risen more than two degrees after the inoculation, and was, therefore, according to the mallein test, glandered. But, as at present, no compensation is given in many districts to the owners of those, to all outward appearance, healthy horses, I do not feel inclined to advocate compulsory slaughter, as in the event of any horse being killed and not found, markedly affected and showing unmistakeable lung lesions, endless disputes would be sure to arise, and ill-feeling necessarily result between practitioner and client.

I, however, am so satisfied with the results of *post-mortems* made and seen by myself upon close on fifty to all outward appearance healthy horses which had responded to the mallein test, and which the owners unhesitatingly consented to have slaughtered, that I have not the slightest hesitation in bringing before the notice of the members of the West of Scotland Veterinary Medical Association for their consideration the following proposition:—

"That the West of Scotland Veterinary Medical Association, recognising the value of mallein as a diagnostic agent in suspected glanders, recommend that the opinion of the various veterinary medical associations be sought upon this subject, in order to decide the advisability of memorialising the Council of the Royal College of Veterinary Surgeons to lay before the Board of Agriculture the following suggestion:

"When glanders occurs in a stud of horses, compulsory testing with mallein should be performed upon each animal in it, and each horse which responds to the test, and is therefore glandered according to the test, should be thereafter slaughtered, and compensation paid to the owner out of the funds of the Board."

My reasons for bringing forward this proposition are that in every *post-mortem* which I made of horses which (although to all outward appearance healthy) had responded to the mallein test, there was only one which did not show lesions that were unquestionably those of glanders, either of an acute or chronic character, and therefore I feel justified in coming to the conclusion that as a test for glanders mallein may be considered almost infallible.

At the conclusion of the PRESIDENT'S remarks—

Mr. BEGG, the Secretary of the Association, renewed the

Adjourned discussion on Tuberculin.

Mr. Chairman and Gentlemen—On rising to re-open the discussion on "Tuberculin Testing," so ably introduced at our last meeting by Mr. J. McLauchlan Young, of Dundee, and adjourned then for future debate on account of its importance, allow me at the outset to say that I have little that is new to add to the remarks I made at last meeting, and it was only at the earnest solicitation of the President last week that I agreed to occupy this position to-day.

Had winter instead of summer months intervened between our last meeting and this I would certainly have had more opportunities for using tuberculin, and would then have had more evidence as to its valne as a diagnostic agent to bring before you to-day, and I have no doubt but that few of us have used so much of it during the last six months as we shall expect to use in the next half-year.

I have, since we last met, injected two full stocks and part of another, besides some 17 or 18 single animals.

The first stock, one of 29 animals, belonged to a farmer who came to our district from North Ayrshire three years ago.

He never had a "pining" cow on his byre on the Ayrshire Farm, where he bred all his own stock; but as his present farm is essentially a dairy one, requiring periodically the buying in of new cows to keep up the supply of milk, there were only 19 of his original stock remaining.

Of the 29 animals tested only four of them were bought in cows.

The conclusions to be drawn from the use of tuberculin in this stock will be obvious to all of you.

One of the non-reacting, belonging to the old stock, died of milk fever last month, and a careful *post-mortem* examination revealed no trace of tubercular disease.

In the second byre which I tested, 20 per cent. of the animals reacted, and in the third 30 per cent., but I am sorry I have no special clinical nor *post-mortem* evidence for or against tuberculin in either case.

Of the single cases tested, one newly-bought cow which I examined as to soundness seven days before she calved, had a short catching chest cough, and was in poorer condition than is consistent with robust health, but I could not detect anything wrong by auscultation.

Being suspicious, I used tuberculin and got absolutely no reaction.

Up till the day she calved she fed fairly well, but she occasionally exhibited the suppressed cough when rising. However, soon after calving she went down with milk fever, and though her brain seemed fully cleared up in forty-eight hours, and complete sensation had returned, she was quite unable to rise at the ninth day, and was consequently killed and a *post-mortem* examination made.

A foreign body was found at the back of the chest which had punctured the reticulum and diaphragm, and caused adhesion of the stomach and part of the liver to the diaphragm, but the condition of the parts was such as to indicate that this state of matters had been in existence for a considerable time. I could find no trace of tuberculosis in the organs or lymphatic glands.

Another cow, a three-year-old, which came from a byre rather famed for sending forth a tubercular animal, I found to have part of both lungs in a softened state. She was tested, as much to satisfy the owner's curiosity as my own, and reached to the extent of five degrees. She was returned to the exposer as a tubercular subject.

At our last meeting some of the older members of our association were very much inclined to doubt the efficacy of tuberculin on account of the large percentage of animals that had reacted in what they looked upon as exceptionally healthy herds. Well, the only answer that can be made to such a conclusion, especially when condemnatory *post-mortem* evidence is not to the fore, is that the fearful and enormous extension of tuberculosis was unknown before the use of tuberculin.

No doubt such results in what we considered our healthiest herds are very stupefying, but we must remember the great difference between a tuberculosis detectable by ordinary clinical examination and tuberculosis only discoverable by tuberculin.

If we make a *post-mortem* examination of some of these reacting but apparently healthy animals, we will find that the evidence of tuberculosis is very insignificant, and probably confined to a few lymphatic glands, so that it is not necessary that all these latent cases should perish.

Recently I injected two young cows under examination as to soundness, and which clinically showed nothing amiss except a slightly enlarged condition of the lymphatic glands in the region of the throat. Both reacted, and I condemned them as being "strumous."

Had any one of these animals not reacted, I should have had no hesitation in advising my client to accept the cow as sound, for I would then have looked upon the glandular enlargement as non-specific, at least so far as the Bacillus tuberculosis is concerned.

It is the aid which tuberculin affords us in such cases as these that should stimulate each and all of us to use it much and often, and to lose no opportunity of proving its leading by *post-mortem* examination.

Some of my clients, who have been doing well in spite of tuberculosis, say they do not wish to know how far their stock is infected, but such a conclusion I characterize as utterly foolish, for whether few or many be affected, a wise farmer should wish to know, and if many, then he could the more seriously set to work to improve the health of his stock.

I think, gentlemen, in this discussion we ought to turn our attention for a time from the dry results of tuberculin testing of herds to the agent itself.

In his paper, Mr. Young wisely made only a few passing but crisp allusions to this branch of the subject, but passed on to those divisions of it which were more capable of interesting an audience, of which probably not half of the gentlemen had ever used tuberculin.

(*To be continued.*)

NORTH OF SCOTLAND VETERINARY MEDICAL SOCIETY.

THE summer meeting of this Society was held in the Bon Accord Restaurant, Mark Street, Aberdeen, on Saturday, August 29th. The President (James Thomson, Esq.) occupied the chair, and there were also present Messrs. McGregor, Howie, Morrison, Mellis, Wood, McPherson, McDonald, McBryde, Anderson, Marsden, Barron, Sievwright, Dawson, Young and Skinner.

Messrs. Cameron, Berwick-on-Tweed; and Thompson, Edinburgh, attended as visitors.

The minutes of the previous meeting having been read and approved, and the roll called, Mr. Paterson, M.R.C.V.S., Cluny, was, on the motion of Mr. McGregor, seconded by Mr. Howie, unanimously elected a member of the Society.

The circular letter from the Southern Counties Veterinary Medical Association, bearing on exemption of veterinary surgeons from serving on juries and on the inadequacy of fees paid to veterinary surgeons when giving evidence in criminal cases was read.

After some discussion, it was resolved that the Southern Counties Veterinary Medical Association be supported in its resolution so far as it applies to exemption from serving on juries.

Mr. YOUNG, M.R.C.V S., Dundee, read a paper on "Tuberculosis and Tuberculin relative to Public Health," in which he expressed the opinion that more cases of tuberculosis arose in the human subject through the ingestion of milk from tuberculous cows than from the ingestion of tuberculous flesh, provided the latter was properly cooked. He also gave some interesting statistics bearing on the development and spread of tuberculosis.

Mr. WOOD, M.R.C.V.S., Turriff, read a paper on "Catarrhal Pneumonia in Irish Calves," in which he very fully described the symptoms and pathology of this disease, as also the line of treatment pursued by him. Discussion having been invited on these papers,

Mr. BARRON intimated his approval of Mr. Wood's treatment of catarrhal pneumonia by ammon. carb. and other stimulants, but so far as tuberculin was concerned his experience was nil.

Mr. G. THOMPSON, Edinburgh, spoke at some length on tuberculosis, and from numerous autopsies of cattle condemned through the tuberculin test which he had witnessed, he felt disposed to question the veracity of tuberculin as a diagnostic aid.

Mr. MELLIS, Inverurie, stated that in a considerable number of cases tested by him the temperature rose to a degree much in excess of that usually seen in pronounced cases of tuberculosis as shown by the aid of tuberculin in other hands.

Mr. ANDERSON, Keith, considered a temperature of 104° to 105° Fah. as being the most characteristic of the disease.

Mr. MCBRYDE, Stricken, was of opinion that all breeding stock should be submitted to the tuberculin test with the view of eradicating tuberculosis.

Mr. MCPHERSON, Huntly, expressed the opinion that the mode of treatment of catarrhal pneumonia presently advocated was very unsatisfactory, and referring to tuberculosis he considered that the tuberculin test ought to be made compulsory in every herd of breeding stock.

Mr. CAMERON, Berwick-on-Tweed, on being invited to express his opinion stated that in his district catarrhal pneumonia in calves was not at all prevalent. Regarding tuberculosis he thought the public were too apathetic, and he would urge on every veterinary surgeon the necessity for making every inquiry and representation anent this dire scourge.

Mr. MORRISON, New Deer, also spoke on tuberculosis, and thought highly of the administration of terebene in the treatment of catarrhal pneumonia.

Mr. MCLAREN, Brechin, recommended ol. terebinth and ol. lini. as being very efficacious in catarrhal pneumonia.

Mr. PATERSON, Cluny, was in favour of the administration of terebene by inhalation through the medium of hot water in catarrhal pneumonia.

Mr. HOWIE, Alford, had been successful with stimulants.

Mr. SKINNER, Old Meldrum, made a few remarks on tuberculosis and catarrhal pneumonia.

The PRESIDENT, in retiring, made mention of the pleasure experienced by him during the two years he had been in office, and of the able assistance rendered him by the members and office-bearers, towards rendering the meetings of the Society successful; he wished the Society every success in the future.

The following gentlemen were unanimously elected office-bearers for the year 1896-7:—President, W. Anderson, Fife Keith; Vice-Presidents, G. Barron, Echt, and Adam Sievwright, Tarland; Secretary, W. Skinner, Old Meldrum; Treasurer, A. Wood, Turriff.

At the close of the meeting the members dined together in Mollison's Restaurant.

WM. SKINNER, *Hon. Sec.*

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

A GENERAL MEETING of the Society was held at the Bush Hotel, Carlisle, on Friday, the 4th of September. Mr. J. Armstrong, F.R.C.V.S., Penrith, President of the Society, occupied the chair, and there were also present: Mr. H. Thompson, Aspatria (treasurer); Mr. Carlisle, Mr. McKie, Mr. Hewson (secretary), Carlisle; Mr. Garnett, Windermere; Mr. Croudace, Haltwhistle.

The SECRETARY read a letter from Mr. Donald, Wigton, F.R.C.V.S., stating "that he could no longer remain a member of the Society after the proceedings of last meeting," and adding that "perhaps the Chairman would explain to the meeting his acceptance of motions which were contrary to all precedent and opposed to established regulations and settled practice."

Mr. GARNETT said Mr. Donald had had a motion on the agenda paper for several meetings, and at last meeting, not being there to move it, and not having deputed anyone to move it for him, the meeting was quite justified in negativing his request for it to be again held over.

Mr. THOMPSON said Mr. Donald had returned the circular he sent him regarding his subscription for the current year, and had written on the back of it "I am not in the enjoyment of members' privileges, and must respectfully decline to respond to the request." He felt very sore and sorry about this, because Mr. Donald was the first man to take steps to form the Society. Along with his (Mr. Thompson's) late son, they fought hard to get it established, and, with the aid of Mr. Carlisle and himself, they succeeded. He could not understand Mr. Donald taking umbrage in this matter. He had had all the privileges enjoyed by other members. He considered Mr. Donald a good member, and he was very sorry he was not present to-day. Mr. Thompson went on to allude to the poor attendance of town members at these meetings. He himself had supported the Society to the best of his power, and had spared neither time nor money to keep it afloat; and if members who did not attend took umbrage at the present office-bearers, he would tender his resignation as treasurer at next meeting, and he hoped the Secretary would do the same, and let the offices go into one hand, but he would do his level best to support the Society.

The PRESIDENT said he did not understand the meaning of Mr. Donald's communications. He was there to be called to order if he had acted contrary to precedent. He challenged anyone to say so. Why did not Mr. Donald come to that meeting and back up what he had said. There was another thing. Once upon a time the Society enjoyed the privilege of having two members on the Council. Now they had none. So far as Mr. Thompson was concerned, he would say nothing. He fought the battle of a good man.

What did Mr. Donald do? When he thought he had a chance of becoming an examiner he threw it up, and never said once that he was going to retire from their representation.

Mr. McKIE suggested that the Secretary write to Mr. Donald asking him to reconsider his decision.

Mr. CROUDACE seconded the motion, which was agreed to.

Service on Juries.

The SECRETARY read the circular letter from the Secretary of the Southern Counties Veterinary Medical Association, Southampton, with regard to the exemption of veterinary surgeons from jury service, and to the question of fees as witnesses in courts of law.

Mr. GARNETT said it was certainly a desirable thing, though as to getting an Act of Parliament as suggested, he did not know whether that would be requisite. He would like them to support the Southern Counties all they could.

Mr. THOMPSON said it appeared that the subject had been brought before the Council, and they had replied that they could not see their way to do anything in the matter, recommending an appeal to the Local Parliamentary representatives. This method of treatiug so commonsense a question by the Council was considered to be an argument in favour of a National Veterinary Association. He thought it was by the aid of societies like this that such things were to be brought about. Their object was to benefit the profession generally, and not single individuals.

Mr. CARLISLE said exemption from jury service was attempted many years ago, but not successfully.

Addresses of Sympathy.

Addresses of condolence on family bereavement were adopted by the meeting and signed by the President and Secretary, for presentation to Mr. Carlisle on the loss of his daughter, to Mr. H. Thompson, Aspatria, on the loss of his daughter, and to Mr. Jos. Pears, Penrith, who, during one year, lost three daughters, whose ages ranged from twenty-one to thirty-three.

On the motion of Mr. HEWSON, a similar address was presented to the President, whose mother died a short time ago.

New Membevs.

Mr. HEWSON nominated Mr. James Spence Smith, Aspatria, as a member of the Society.

X Rays and the Horse's Foot.

Mr. THOMPSON said he had the pleasure of seeing a demonstration of the X rays at the Melrose meeting, and what gratified him most was to see the application of the rays to the foot of a horse, the photograph showing that the nails in the horn took from an outward to an inward direction. This was gratifying to him on account of a little "tiff" he had, the particulars of which he brought before the last meeting.

Cases of Umbilical Hernia.

Mr. THOMPSON, speaking on this subject, which was introduced by the President at last meeting, said the two cases which Mr. Armstrong then brought forward were rather unique, and showed that opening into the abdomen was not such a very serious matter as they used to think. How many thousands of horses, cattle, sheep, dogs, and cats were castrated when young; the opening was made into the abdominal cavity, yet all seemed to do well. But Mr. Armstrong's cases went further, an opening being made into the intestines. One grand feature about them

was non-intervention. In the principal portion of these cases as long as the animal will feed, and show no constitutional disturbance, let well alone and don't interfere. It was astonishing what nature would do. Whereas, if you began to wash and interfere, possibly the case would terminate fatally. He once saw this well exemplified in a case of hernia of the brain in a young groom, who had been pitched off a horse and kicked on the side of the head; a portion of the convolution of the brain came through the opening on to his ear for an inch and a half. He was carried home and put on a mattress. The doctor (Dr. Jones) would not allow him to be undressed, and would not let them touch the piece of brain or even sponge off the blood. The owner of the horse was so sympathetic that he would touch the young man's lips with some brandy and water on a feather. He immediately went into convulsions. Great care had then to be used, and within a few days the brain gradually receded and went nicely back into its place, and a splendid recovery resulted, which was due to non-intervention. He was like Macbeth in reference to physic—"I'll none of it."

The PRESIDENT said he had little to add to what he said at last meeting on this subject. He tried to show them what Mr. Thompson had now advanced. The advantages of non-interference, cleanliness, and antiseptics.

Mr. THOMPSON: I did not say cleanliness and antiseptics; I said non-intervention.

The PRESIDENT added that he agreed with some of Mr. Thompson's remarks, but not with all.

Mr. H. THOMPSON here read a paper on "Does the Council of the R.C.V.S. as at present constituted represent the profession? with some anomalies of the Council."

As an ex-Councilman and one that was blackballed at the last election I venture to say that the Council as at present constituted does not represent the profession.

On examining the register of 1896, the total number of the profession is 3,179 estimated as follows:—

England	2,043
Scotland	347
Ireland	303
Wales	91
Foreign Parts	203
The Army	192
	3,179

These are represented on the Council Board by 32 members or about one to every 99, and if a proper electoral divisian was made the representation would be something like the following:—

	Members.	Representatives.
Middlesex	241 ..	$2\frac{1}{2}$
Lancashire	202 ..	$2\frac{1}{2}$
Yorkshire	291 ..	3
Rest of England	1,309 ..	13
Scotland	347 ..	$3\frac{1}{2}$
Ireland	303 ..	3
Wales	91 ..	1
Army	192 ..	2
Foreign	203 ..	2
	3,179	$32\frac{1}{2}$

Now, how are we represented? Referring to the names of those on the

Board, as at present formed, there are no less than ten of them living in London, or about one-third of the whole council, three of whom are teachers at the Camden Town Veterinary College, so that it may almost be said that the Council represents London and the Royal Veterinary College.

Lancashire has three members from Manchester alone, Yorkshire has two representatives, while Ireland has only one lay Councilman, and two of the Scottish colleges are represented by three members from the teaching staff, while Glasgow College and the lay members of Scotland have no representation at all; the army is also well represented.

Now, gentlemen, should this state of things exist? I say no! and I again repeat what I said at Penrith at our meeting on 13th March last, that the profession will not be properly represented until we have electoral divisions and members of Council paid for their services. It can hardly be looked for, a country practitioner leaving his work for two or three days and paying his own expenses to and from London four or five times a year, and it is only by agitation that these reforms can be brought about. This and all kindred societies should take the matter up and refuse to support candidates for the Council Board unless they will endeavour to bring about this legislation. But from the experience we had at the last election, it seems to me that the members of the profession generally pay little attention or care very little about veterinary politics. This was well exemplified when the anonymous circular with the large black lines through some of the retiring members, names was so well responded to. It showed pretty well the state of knowledge of the profession on veterinary politics.

It was a splendid electoral dodge on the eve of filling up the voting papers, and this was said to be done in support of higher education, while those men who were black-balled, were saddled with being against it, and were sent to the right-about for sticking to the bye-laws even when supported by counsel's opinion—they were as much in favour of the higher education as those on the other side who professed to be its great supporters.

If bye-law 52 did not fulfil the requirements, notice of motion should have first been given to have it rescinded, and not amended, and another put in its place, but as long as it remained on the Register, it would have to be followed.

On referring to the Register, it will be found that bye-law 52, and the first schedule, had to be read together to be understood. The bye-law said "that students who enter the veterinary schools shall, prior to their first professional examination of the Royal College of Veterinary Surgeons, produce to the secretary of the R.C.V.S. one of the certificates specified on the first schedule."

Now the first schedule contains the names of 21 examining bodies in England, Ireland, and Scotland, and a certificate from any one of these admits the student as a pupil to the teaching schools, but there is no mention in the bye-laws about how many times the candidate had to sit for his certificates.

It would be a bit of presumption on the part of the Council to dictate to anyone of the examining institutions how they had to conduct their examinations, and I think it can hardly be said that the great storm in the teapot was due to these certificates. From what I can gather, the great commotion was owing to students who had no certificate from any of these institutions, and had to pass a matriculation examination in general education prior to their first professional.

Now I have searched the bye-laws through, and cannot find in any part of them where the Council of the R.C.V.S. says that a student shall pass any matriculation examination; it may be a minute, but it is not in the bye-laws. Is this an oversight of the Council? Some of the teaching schools include

the matriculation examination in their prospectuses and advertisements, and name the subjects which the candidates are likely to be examined in. Is this by order of the Council?

Bye-law 52, as recently altered, reads "Students who enter veterinary schools *shall*, prior to their first professional examination by the R.C.V.S., produce a certificate entitling the holder to be registered as a medical student." Note the word *shall*. Why cannot the Council make a bye-law for a matriculation of its own, and state the subjects to be covered in the syllabus? This examination would have to be passed by all students who could not produce an equivalent certificate, and by these means what is required of a young man entering college would be distinctly understood by all.

This I think would put an end to the chopping and changing, the bitterness and unpleasantness that has lately clouded the horizon of veterinary politics. What has to come of the self-educated men? As a rule they generally make the best men! I say let us have free trade in education. No matter how or when a man gets his education if he satisfies those men who are selected and appointed to examine him.

With reference to some of the anomalies at present carried on at the Council Board, on glancing through the Register I was surprised to note bye-law 25. "That there has to be three trustees of the body corporate to be elected by the Council, *and shall not include the treasurer*." Now Mr. Wragg is one of the trustees as well as treasurer. How is this? Again bye-law 29. *The Council shall annually elect at their first meetiug two auditors, etc.* Was this done at the first meeting this term?

I was at the last meeting of the last term, and the auditors were then elected on the motion of the treasurer. I asked the meeting if that was in order, when Professor Pritchard got up and said he considered it out of form, and he nominated the auditors, but neither the Professor nor myself were reported or taken notice of.

Again bye-law 48 "The treasurer shall be responsible for the preparation of the balance sheet." Yet Mr. Wragg is reported to have said in answer to Mr. Hurndall at the last annual meeting "That he was not responsible for the balance sheet." Mr: Wragg is a personal friend and I have every confidence in him, and feel certain he will be the first man to have these matters put right, he can only have accepted the offices without reading the rules.

If the bye-laws are made for the proper conducting of the work of the College on business lines let them be adhered to or rescinded if not snitable, and substitute those that are. The above shows how little the old members of the Council board know or care about some of the regulations.

It may be asked why I did not call attention to the subjects when on the Council. First, it takes some little time to get your bearings and know the members of the Cour cil? Second, outsiders living at long distances from any of their colleagues with no one to consult on the subjects to be brought before the board find that when they get to London matters are nearly all cut and dried and they themselves almost powerless. Third. The time of the Council is also often taken up with long speeches, the principal portion of which being foreign to the business before the meeting, proving and fending this, that, and the other, and introducing personalities, etc.

Gentlemen, this was well illustrated in *The Veterinary Record* of August 15th wherein was a long article by Professor McFadyean and replied to by Mr. Hunting. I must say it is a fair good specimen of my experience of the Council Board. All personalities, etc., should be left on the door step on entering the building.

There is another matter I wish to allude to and that is bye-law 13 which says "All resolutions carried at the meetings of the Council except such as

relate to the bye-laws shall be acted upon without further confirmation." Yet after certain resolutions have been agreed upon in committee, and passed at the general Council meeting, another meeting is called in 14 days after for their confirmation or otherwise; this I find in accordance to the working of the Charter of 1844, and the sooner it is altered the better.

Having pointed out some of the things which seem to be out of joint in the working of our governing body, let me again say that I consider the remedy for these anomalies is a more thorough representation of the profession on the Council. I am persuaded that this cannot be brought about until we have electoral divisions. The town, the country, and the army sections of the profession would be fairly and proportionally represented. One other point, and this is the payment of compensation for time and services rendered. Second-class fare to and from London ought to be allowed each member, so enabling a country practitioner living several hundred miles from the metropolis to be present at the deliberations of the Council and its committees as often as those living within a few miles of Red Lion Square.

Mr. CARLISLE said he coincided with Mr. Thompson in all he had said. The London men had things too much their own way, and did not pay sufficient attention to people at a distance. They made the laws and altered them to suit their purpose, and did not give country practitioners a fair chance. The subject should be looked into by proper authority.

Mr. GARNETT said they must thank Mr. Thompson for bringing the question so fully before them. It was time they made a practical move in it, and the best thing would be to formulate a scheme for the representation on the Council according to Mr. Thompson's suggestion. There should be equal electoral districts returning a fair proportion of members. This was more the work of a committee than of a single individual, but once the subject was ventilated he felt sure that it would be taken up by the large body of country practitioners who, when they went to London on Council business, had to devote two or three days to business that occupied the London men only a couple of hours.

The PRESIDENT agreed with Mr. Garnett and said they should have a re-distribution of seats. Not long ago they were represented by two members on the Council, now they had not even one.

Mr. GARNETT moved that Mr. Thompson bring the subject up again in the form of a scheme for the re-distribution of seats, and this was agreed to.

(*To be continued.*)

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held at the Grand Hotel, Birmingham, on the afternoon of Tuesday, August 11th. The President (Mr F. L. Gooch, of Stamford) occupied the chair, and there were also present Messrs. W. Hunting, London; Blakeway, Malcolm, Taylor, Gibson, Parker, Birmingham; Burchnall, Loughborough; E. G. Crowhurst, Leamington; Trigger, Newcastle; Green, Dudley; Carless, Worcester; Kidd, Melton Mowbray; Collett, West Bromwich; Over, Rugby; Grasby, Daventry; Brooke, Handsworth; Jones, Leicester; H. J. Dawes, Hon. Sec., West Bromwich; Beddard, Wolverhampton; Wartnaby, Burton-upon-Trent.

Apologies.

The HON. SECRETARY announced the receipt of letters and telegrams regretting the inability of the senders to be present from the following:—Professors Penberthy, Pritchard, Sir H. L. Simpson, Messrs. Barling, Barrett,

Carless, Aris, Mason, J. R. Green, Woolston, Wragg, Olver, Bambridge, Merrick, and others.

A Personal Explanation.

Arising out of the minutes of the previous meeting (which were duly read by the Hon. Sec.) was a matter in regard to which Mr. Hunting sought permission to render a personal explanation. The Association, at their last meeting, drew attention by a resolution to the fact that he, as editor of *The Record*, had declined to insert a communication for the Hon. Secretary. The explanation which he (Mr. Hunting) had to offer was this. He was at all times willing to publish the report of any meeting that may be sent to him by the Association, but he held that he had a perfect right to decline to publish a mere resolution without any accompanying account of the meeting at which it was passed. If he had offended the Association he was wiiling to express his regret, but under the circumstances of the last election when so many misrepresentations were being made, he thought he was justified in not publishing a resolution, passed within so near the date of the polling, when there was no accompanying statement as to how many were present at the meeting, or what arguments led to the opinion.

After a few further observations the subject dropped.

Vote of Condolence.

Mr. TRIGGER said that before passing on to the business on the agenda, he wished to discharge a very melancholy, but as he thought, necessary obligation. A deep gloom had been cast over the Association by the loss they had just sustained in the painfully sudden death of their old and valued friend Mr. J. Coe. As the nearest practitioner to Mr. Coe, he had better means than most of them of judging his character. He was a man of an exceptionally kindly and genial nature, and he had justly won the esteem and regard of every member of the profession who knew him. Personally, he (Mr. Trigger) grieved bitterly for the loss of a true friend and kindly neighbour, and above all an honourable opponent, and he begged to move that this Association request their Hon. Secretary to convey to his son (who succeeds him in the practice) and to the other members of his family their heartfelt sympathy in their sad bereavement.

Mr. W. S. CARLESS, who said he had known and admired the deceased gentleman from his earliest boyhood, seconded the resolution, which was carried *sub silentio*.

Nominations and Election.

Mr. W. GRASBY nominated for membership of the Association Mr. Harry Sharman Reynolds, of Daventry.

The HON. SEC., on behalf of Mr. J. R. Green, of Alfreton, nominated Mr. T. Ludlow, of Mansfield.

The HON. TREASURER nominated Captain Marriott, of the Army Veterinary Department.

The above names, according to rule, will be submitted for election at the next meeting.

The HON. SEC. moved the election of Mr. George De Lisle Tinkler, of Syston, which was seconded by the CHAIRMAN, and carried unanimously.

Professional Matters.

The HON. SEC. submitted the circular letter from the Southern Counties Veterinary Medical Association, respecting (1) the fees paid to veterinary surgeons for giving evidence in courts of justice; and (2) the question of exempting members of the profession from serving upon juries.

Mr. W. S. CARLESS thought they ought to take some steps in the matter. Serving on juries was often a great hardship on a professional man, and he thought they ought to be exempt. With regard to fees in criminal cases, he always had a guinea, and make an understanding with the solicitor who employed him before going into the witness-box.

The HON. TREASURER thought they were pretty well all agreed upon the jury matter, but the question was, how were they to get exempted? He understood that it could only be done by Act of Parliament, and as they were already well represented on the Council, they ought to rest assured that when the time came, steps would be taken to advance their interests. He thought it was premature to do anything yet, although they might pass a resolution asking the Council to keep the matter in view, and bring it forward for consideration at the proper time.

Mr. HUNTING argued that it was all very well for the educated classes to get out of serving on juries, but it was a perilous proceeding for all Englishmen of education to attempt. The end of it would be that there would be nobody left to serve on a jury but a greengrocer and a crossing sweeper, and he would like to know what things would come to then. If they took a serious view of the subject and looked a little higher than mere personal likes and dislikes, they would stop all references to the question of exemption from juries.

Mr. BURCHNALL, reverting to the question of fees for professional evidence, expressed the opinion that it was a matter over which the judge had absolute control.

Mr. E. G. CROWHURST observed that before he went to Leamington he was always sure of a guinea for giving evidence, but now he could only get half-a-guinea.

Mr. TRIGGER agreed that nothing short of an Act of Parliament could affect the jury question. They might depend upon it that when the revision of the jury list came forward again, the interests of the profession would be jealously watched by the Council. With regard to the question of fees, he thought that was a matter entirely in their own hands. They should simply decline to give evidence until they had got such a fee as they wanted.

The CHAIRMAN said that as no one seemed anxious to move in the matter, he should propose that the letter be allowed to lay on the table. This was seconded by the HON. SECRETARY, and carried *nem. con.*

The Walley Memorial Fund.

Mr. J. MALCOLM proposed the following resolution, standing on the agenda in his name, "That a sum of money be voted to the Walley Memorial Fund." He said: I feel sure I shall have the support of you all in this motion. I don't think it is necessary for me to say anything about the late Professor Walley and what he did for the Profession of which he was so bright an ornament. It has been gone over at previous meetings, and I think the fact that this proposed memorial is to take the form of a prize to be awarded to the students from any British Veterinary College who pass the best examination at Class C in the four years' course, will make it appeal to members of the profession in the Midlands, as it has already done in other parts of the country. We all know what a stimulus a prize gives to the veterinary student. I remember in my day it induced a considerable number to work a good deal harder than they would otherwise have done, and I have no doubt the same state of things prevails to-day. You will remember that Professor Walley was essentially a Midland man. He was the teacher of many of us, and had many friends in this Association. The only question, to my mind, that seems open for discussion is the amount that should be given towards the memorial. I have been talking the matter over with our treasurer, who, I think, should be first consulted in

matters of this kind, and he thinks that the sum of ten guineas could well be spared from the funds of the Association towards the object I am referring to. I therefore move that the sum of ten guineas be voted to the Walley Memorial Fund.

The HON. TREASURER: I have much pleasure in seconding the motion. Professor Walley was a warm-hearted member of this Association, and read many good papers before us. We have about £160 in hand, and I think we can easily afford ten guineas for so worthy an object.

The motion was put to the meeting, and without any discussion, was unanimously agreed to.

Shoulder Lameness.

BY WILLIAM HUNTING, F.R.C.V.S.

Until we are able to make a reasonable diagnosis, the treatment of lameness is most unsatisfactory. It is even more unsatisfactory to the surgeon than to the owner of the disabled animal, for we recognise that our treatment is inexact and our knowledge of the lesion very indefinite, whilst he, with simple faith, looks only at the result, which may be good. It may be, for instance, that we diagnose a case as "foot-lameness." We are tolerably certain that the lesion is in the foot, but its exact nature and position is not certain. Treatment is applied to the foot and recovery follows. Such a case gives satisfaction to the owner, but not to the veterinarian who takes a really scientific interest in his work. He would like to know the exact position and nature of the injury causing lameness, so that he might apply what remedies he possessed with precision. He would, in short, like his treatment to be scientific and rational instead of empirical and dubious.

This desire for information was what induced me to accept your President's request that I should offer some question for discussion at this meeting. I have often been puzzled with cases of "shoulder lameness" in horses, and it occurred to me that the Midland Veterinary Medical Society might assist not only me, but the whole profession, in making clearer the conditions which give rise to some of the lamenesses traced to the region of the shoulder. You will see, then, gentlemen, that my intention is not to give, but to extract information, and you will not, I hope, disapprove the line I have taken.

I propose only to try and arrange the subject in a manner most convenient for your consideration. I shall leave those conditions which are palpable and evident causes of lameness with merely a mention, but I shall freely acknowledge my ignorance of other conditions which are identified by certain symptoms, but which are capable of more than one hypothesis as to their origin.

In connection with lameness, the region of the shoulder must include the wall of the chest from the first to the eighth rib, and the muscles attaching the fore limb to the body. It includes the two bones—scapula and humerus—with their joints, muscles, nerves, and vessels. This is a very large region with a most complex structure. Deep seated lesions are so buried under enormous masses of muscle, and protected by two large bones, that nothing definite is detectable by the most careful manipulation. Where we cannot feel or see the lesion we can only judge by alterations in the position or action of a limb. I am afraid that different lesions in the region of the shoulder are capable of producing appearances so similar that we cannot differentiate between them. I also fear that secondary changes so rapidly set in that we may mistake effects for causes—especially is this possible in the case of muscular wasting.

The most evident causes of lameness traceable to the region of the shoulder are fractures. Of these I need say nothing. They are generally

diagnosable and seldom worth treating except in foals or horses kept for stud purposes.

The scapulo-humeral joint is of course subject to the wounds and injuries which affect other joints. To only one of these will I now direct attention, viz., dislocation. This is said to occur, and some reported cases ought, perhaps, to be convincing. Not merely because I have never seen one, but because the surroundings of the joint seem so strong and unyielding as to render such an accident impossible, I ask if anyone here to-day can supply corroboration of the very scant records of this serious lesion. I can quite understand extreme violence, such as might result from a fall from a great height, or a blow inflicted by a heavy weight in motion—say another horse or an engine—causing dislocation, but I should then expect accompanying fracture of the scapula, and very grave lesions of the connecting structures. Pure and simple dislocation or luxation of the humerus on the scapula I cannot realise.

Injuries to the point of the shoulder are not uncommon. Contusions affecting only the skin and superficial muscular layers cause temporary lameness, and are recognisable by the classical symptoms of heat, pain, and swelling. More serious contusions injure the tendon of the flexor brachii and give rise to lesions in the bursa which surround the tendon and enclose the bicipital groove of the humerus.

The bursa and tendon of the flexor brachii are, on *post-mortem* examination, not unfrequently found to have suffered extensive pathological changes—the most common being ossification of the tendon, erosion of the cartilage covering the bicipital groove, and the formation of furrows on the gliding surfaces of both bone and tendon. This of course indicates a case of chronic lameness, and the symptoms shown during life are not always sufficient to enable us to locate the mischief.

In a recent acute case we are assisted by the local inflammatory symptoms, some swelling and tenderness on pressure. When these have abated and marked lameness remains, is there any peculiarity of position or movement that guides us in locating the injury? The chief symptoms are inability to bear weight on the limb and great difficulty in moving the leg forward. At rest the knee is bent and the foot placed behind the line of the opposite foot. These symptoms certainly suggest some lesion of the shoulder joint, but they are the same whether the scapulo-humeral articulation is the seat of mischief or whether the tendon and bursa of the flexor brachii be diseased. Perhaps it may be said that exact differentiation between disease in the one place and in the other is of little practical importance, for in both recovery is unlikely, and treatment would vary only in the position of a blister—and vary very little. This is to a great extent true, but as disease of the joint is even more serious than disease of the bursa exact diagnosis is important, as it might enable us to give a more certain prognosis of the case. It was said by Professor Barlow that pressure over the joint, applied between the tendons of the antea and postea spinata would elicit signs of pain when the joint was the seat of mischief, whilst pressure applied to inner and outer borders of the biceps tendon would afford indications of disease in the bursa. During the acute inflammatory condition this is possibly correct, but my experience does not warrant me in saying that chronic cases respond to these manipulations. In fact I am inclined to think that pressure with the fingers in cases of shoulder lameness gives very unreliable results—some horses flinch when no diseased spot is touched whilst some show no response when disease really exists.

Dragging the toe is undoubtedly a sign of lameness located in the region of the shoulder, but it is not a symptom indicative of lesion in any special part. It merely shows an inability to raise the leg. Bringing the limb forward with an outward circular sweep is also a common sign of shoulder lameness but it,

again, only indicates a want of power to raise the limb, which may be due to pain in various structures or to want of power in certain muscles. Probably this circular sweep of the limb in all cases of very marked lameness may be accepted as indicating a lameness seated in the region of the shoulder. In less marked, but still acute, lameness I am quite certain that this form of movement is seen in cases when the lesion is not in the shoulder. I have observed it in conjunction with splints which interfered with the knee, and also in some cases of foot lameness. Action alone cannot be trusted to guide us to the seat of shoulder lameness.

Probably in no part of the body do lesions of muscle so often cause lameness as in the region of the shoulder. We know that the flexor-brachii suffers from external injury, and it is probable that it may also be damaged by sprain. I cannot say that I have ever met with a case in which I traced lameness to this cause. That the antagonistic muscle—the extensor brachii—is sometimes injured I know. I have seen it wasted frequently, but whether such wasting takes place from primary disease or injury is by no means clear. More than one definite cause of lameness in the shoulder region is accompanied by a letting down of the lower end of the humerus, so that the leg hangs and the extensor brachii is stretched. When such cases are prolonged, wasting of the extensor muscle always results, and the animal regains sound action long before the muscle returns to its original bulk.

There is a form of lameness in which pressure on the lower part of the levator humeri causes spasmodic contraction of the muscle. In two cases where I have met this symptom there has been also evidence of pain on depression of the neck. In both a *post-mortem* examination disclosed disease affecting the fibro-cartilaginous disc and articular surface of one or more cervical vertibræ. In another case, the chief symptoms of which were a crouching position of the body between the fore limbs and a want of co-ordination of movement in the shoulder muscles, a *post-mortem* examination showed disease of the articular surfaces of the second and third dorsal vertebræ. It is difficult then, when the action of muscles is alone the indication of lameness, to be certain whether the intrinsic structure of the muscle is at fault or its nervous supply. It is also certain that movement of a region may be defective or irregular as the result of intense pain emanating from a distant part—increased by motion.

There is a marked shoulder lameness in which the whole region seems to drop. From the striking position of the elbow, which may be six inches or more lower than its fellow, such cases have been termed "dropped elbow." The knee is bent and the fetlock flexed, so that only the front of the hoof touches the ground. Messrs. Willis, Byerley, H. G. Rogers, and others have discovered fracture of the first rib as the only lesion visible on *post-mortem* examination in these cases. A first look at such a case would suggest paralysis of the extensor brachii, but if the limb be straightened by holding the foot firmly on the ground and forcing back the knee, the elbow is raised to its normal position and the extensor muscle presents no sign of disease that can be seen or felt. Such cases are so distinctive that they have been diagnosed during life, and the diagnosis verified by *post-mortem* examination. Some of them exist for weeks or even months without indication of returning soundness, and the *post-mortem* discloses a united fracture of the first rib. Others, after exhibited for some weeks quite as acute symptoms as the incurable cases, gradually regain the power to stand on the foot, then to move the limb forward with little difficulty, and, finally, become quite sound and resume work. In my own experience three of these cases have shown a peculiar event. Up to a certain day they have given no sign of improvement; they have required assistance to rise, and when standing, were incapable of putting the slightest weight upon the foot. On

visiting there next day, I was astonished to find the horse standing, and with care, capable of being led out a few yards. The leg is moved forward, the foot laid on the ground, and progression made somehow. Of course, when weight is placed upon the limb, there is almost a muscular collapse of the shoulder—but locomotion is possible, whereas the day before it was not. After this, recovery goes on slowly. In every case the horse-keepers told me the same tale. "He made a great row as though struggling to get up. I thought he must have got cast, but when I ran to the box, I found him, to my astonishment, up and resting the foot on the ground, and when he walked, putting some weight on it." I have wondered whether this event could be due to the replacement or displacement of anything, or to the breaking down of some adhesions that had taken place.

The cases that recover do not enable us to speak positively as to the lesion which caused them. Mr. Willis and Mr. Porch have now under their notice horses which have shown the distinctive symptoms of "dropped elbow," cases of supposed fracture of first rib. These horses have been for some time at work, and are going quite sound. Should they have the misfortune to die in their present service, a careful *post-mortem* will be held, and one more doubt in the diagnosis of lameness cleared up.

Professor Williams in his "Surgery" gives a very correct description of the symptoms seen in fracture of the first rib. It will be found under the head of "Elbow Lameness," and is traced to sprain or injury of the *triceps extensor brachii.*

In Mr. Dollar's translation of Möller's Surgery are two drawings of shoulder lameness. The one at page 452 represents disease of the bursa of the flexor brachii. The one at page 459 represents paralysis of the radial nerve—both are suggestive of the earlier stages of fractured first rib, but neither are exactly it. A position, I think, diagnostic is seen as recovery progresses—the foot is placed forward resting flatly on the ground, and the knee is flexed—a position only possible when the elbow is below the level of its fellow joint.

There is one more shoulder lameness I must submit for your discussion—the so-called "shoulder slip." Professor Williams describes it as "that peculiar outward slipping movement of the shoulder joint, at each step the animal takes, when the foot of the lame limb is upon the ground, the opposite one elevated from it, and when the weight of the horse is thus thrown upon the lame side. It would appear almost as if the shoulder were out of joint, hence the term "shoulder slip." He adds, "In some cases there will be swelling and heat over the course of the spinata muscles; but in the majority of cases actual lameness does not occur until the muscles have become atrophied.

In Möller I find this description—"The disease then is distinguished by lameness when weight is placed upon the limb, by abduction of the limb and by jerking of the shoulder outwards at the moment when the leg is perpendicular. Atrophy of the paralysed muscles occurs later, and is most marked in the spinatus and teres muscles." The name of the lameness, according to Möller, is "paralyses of the supra scapula nerve," and the causes are blows and other injuries, "violent backward movement of the shoulder or of the leg, whereby the nerve is stretched."

Möller states that "Section of the tendon of the postea-spinata muscle results in precisely similar lameness, as I have repeatedly convinced myself and have demonstrated to my students."

Williams states the condition mostly occurs in young horses at plough. Möller says nothing of ploughing as a cause, nor does he refer to age as predisposing it.

The two authorities, you will notice, differ as to the nature of the lesion. Möller believes the nerve to be injured and the muscle then to become

paralysed. Williams believes the muscle is first sprained and the atrophy follows. My experience of these cases is confined to two instances, both of which showed extensive atrophy and lameness, but in neither was any history obtainable, the owners having just purchased them. I cannot quite accept the theory of strain, and I do not understand the hypothesis of nerve paralysis, especially as the resnlt of stretching.

One more variety of shoulder lameness has come under my notice—embolism of the axillary artery. The lameness came on suddenly at work, and great difficulty was experienced in getting the horse home. The limb was almost paralysed and deathly cold. The horse was put in slings and in twenty-four hours the other fore-leg was nearly as bad. Slaughter was at once carried out and a *post-mortem* examination disclosed the site of the plugged vessel.

In 1849 Percival wrote on lameness. He recognised disease of the shoulder joint and disease of the bicipital groove, but that was all the definition he attempted. Barlow more distinctly defined these conditions and added a good account of "shoulder slip." We have, I fear, not made much more progress since. In fact with the exception of Willis's discovery of fracture of the first rib I doubt whether we have been able to distinguish and classify any further than Barlow. Möller I must confess differentiates more thoroughly than any writer with whom I am acquainted, but I feel a doubt in accepting all his distinctions. It is only fair to add that this author acknowledges the difficulties and in a chapter on "Shoulder Lameness" points out that in many cases where the shoulder is indicated as the region affected, it is impossible to exactly locate the lesion. I agree with him.

(*To be continued.*)

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held at the Grand Hotel, Manchester, on Thursday, September 3rd. Tea five p.m., business six p.m.

Present:—The President (J. H. Carter, Esq.), in the chair; also Messrs. J. B. Wolstenholme, E. Faulkner, W. A. Taylor, G. G. Mayor, T. Hopkin, Wm. Woods, W. Dacre, R. C. Edwards, Geo. Howe, S. Jackson, McKenna, Jas. Marshall, A. Michaelis, J. C. L. Jones, R. Ward, P. Gillespie, H. Percival, and H. Chorlton (hon. secretary.)

Upon Mr. DACRE'S proposition, seconded by Mr. FAULKNER, it was unanimously carried that last meeting's minutes be taken as read.

Mr. Harry Percival, M.R.C.V.S., Macclesfield, was unanimously elected a member of the Association upon Mr. CHORLTON'S proposition, seconded by Mr. HOWE.

Respecting the report from the Election Committee, the PRESIDENT said the members would be aware that Mr. Lawson had been elected as the Association's representative on the Council. Certain matters requiring investigation prevented his giving any report then, but this would be brought up at a subsequent meeting.

Mr. S. JACKSON showed specimens of a petrified kidney and gall concretions from a horse.

Mr. CHORLTON exhibited the liver of a twelve-year-old fox-terrier, which presented a peculiarly hob-nailed appearance, the prominences being of a yellowish colour. The animal was brought to him in a state of collapse. It lived two days, and he then poisoned it. There was nothing noteworthy in the case except a slight enlargement of the abdomen, and before it was destroyed a fair amount of blood came down the mouth and that there was profuse diarrhœa of a dark brown character. He desired to know the condition of the liver.

Mr. WOLSTENHOLME replied that it would probably be difficult for anyone to determine the condition of the liver except by a microscopical examination.

The question of the applicability and benefits which may accrue to veterinary surgery by the use of the Röntgen rays was considered. The subject was introduced by Mr. V. E. Johnson, M.A., of Alderley Edge, who had recently been making investigations at the Royal Veterinary College, London, in conjunction with Professor Hobday. At the outset Mr. Johnson very kindly explained and demonstrated the methods adopted by him in the process. Then followed an exhibition of a large number of the skiographs he had obtained from a variety of subjects. Several taken from the carpus (knee) of the horse were shown, one of which plainly demonstrated the bones composing that joint. Afterwards others of the tarsus (hock), two of which clearly indicated the divisions whicx exist between the small bones composing that joint. Then came a series which included the fetlock and foot of the horse, one of which demonstrated the presence of sidebones and a small ringbone very distinctly. Among the plates obtained from the dog was one demonstrating a fracture of the femur, also of a skull, side view, and a skull, back view. A comminuted fracture of the paw of a cat, also the skull, front legs, portion of the ribs, and spine of a cat. Several plates showing the head and face of a rabbit in which certain dental irregularities were observable. There was also an exceptionally fine plate showing all the bones of a rat. A fracture in the bones of the foot of a chicken was also well demonstrated. The shoe, together with the nails which fastened it to the foot of a horse came out in distinct relief, so that graduation in colour demonstrating the shoe nails, hoof, and bones of the foot were well marked. Another plate clearly indicated the position of a nail which had been driven into the foot after death in such a manner as to have caused injury to the sensitive structures. In the discussion which followed the possibility of applying the rays to aid in the diagnosis of a variety of conditions was considered, amongst which were with respect to the horse, split or fractured pastern and fracture of the bone within the hoof (coffin bone). The presence or otherwise of sidebone, ringbone, and spavin. The extent of injuries to horse's feet by puncture from nails in shoeing and from nails and other hard substances gathered whilst travelling on the roads, fractures of the ribs, the vertebræ, and the presence or otherwise together with the location of intestinal calculi.

The PRESIDENT expressed his indebtedness to Mr. Johnson for helping the Association.

Mr. DACRE proposed a hearty vote of thanks to Mr. Johnson for his most interesting and instructive subject. Without doubt he would have the satisfactihn of knowing that what he had communicated to the members would be treasured by them and that he would always be a very welcome guest at the Society's meetings.

Mr. FAULKNER seconded Mr. Dacre's proposition.

Mr. JOHNSON briefly acknowledged.

The PRESIDENT then read the following extremely interesting and instructive paper on "Clinical Notes."

I must apologise for the incompleteness of my hurried compilation of one or two, what I trust may prove interesting, though by no means unique cases, which have come under my observation since our last meeting. In so doing I do not claim any originality, nor do I wish to impress you with the idea that I am introducing any case unknown to you. I much regret my inability to secure an abler exponent in my stead to-day, who could do more justice to a paper than I could ever hope to. I can assure you, gentlemen, my feelings were not consulted when I consented at the eleventh hour to read a paper here to-day, the consent being given to allay the perturbation of our indefatigable Secretary, and, under the circumstances, I must crave your

indulgence for any shortcomings of mine. The cases I purpose alluding to are :—

(1.) Paraphymosis in the horse, amputation, and recovery.
(2.) Recurrent gastritis in the horse, and its sequel.
(3.) Ascites in the dog, due to rupture of the bladder.

The first case of paraphymosis was brought to my yard on June 15th, a brown harness horse in poor condition, penis hanging pendulously, the animal being unable to draw it into the sheath. On examination, it was noticed to be greatly tumefied about 6 inches from its extremity, this tumefaction undoubtedly acting as a deterrent to its return.

Treatment.

Scarified the parts freely, after which I returned it into its sheath, inserting two twine sutures, and gave some nervine tonic powders to overcome any debility which might exist.

June 17.—Horse returned, sutures having given way, and the penis out as before. I had the parts irrigated with astringent lotion (alum and water) for about half-an-hour, after which I pushed the penis home, and this time inserted three tape sutures, taking a firmer hold, and ordered cold water douche to be applied frequently throughout the day.

June 19.—Horse returned as bad as ever. The penis had by some means mounted the upper suture, and was out as bad as before. The organ was much swollen through pressure exercised by suture over the urethra, causing suppression of urine, and, consequently, the horse was in great pain. I immediately cut through the tape, removing the pressure, to the manifest relief of the animal by a profuse flow of urine. I advised the owner to leave the animal at my place, to which suggestion he readily assented; had horse placed in box, re-scarified all round the tumefaction, after which cold douche; returned the penis as far as possible, and retained it by a large sponge and a broad cotton bandage carried round the loins, and tied as tightly as was consistent. Following morning the animal was found to have been down, bandage displaced, and things as bad as ever. I repeated this treatment and placed the animal into slings, which had the desired effect of keeping the bandage in its place, but when this was removed it was not many minutes before the penis made its appearance, and, later, out as bad as ever. I persevered with this treatment until June 29th with no good results, when I decided to amputate, so had the horse cast and penis amputated in the usual way, as directed in our text books, under the influence of cocaine injection 20 per cent. solution. I was much astonished at the slight hæmorrhage resulting immediately after the operation. All went well until 10 p.m.; when my assistant casually looked into the box; he imagined he heard a noise like the running of a tap. His suspicions being aroused, he immediately examined the horse, and found it bleeding so profusely as to cause some alarm. He at once repaired to the surgery, saturated some tow with liqr. ferri perchlor., and packed the inside of the sheath with this, which abated the hæmorrhage somewhat, but in a short time it returned as forcible as before. I then administered tinct. hamamelis vergin., 1oz., in water, but this, not having the desired effect, I gave tinc. ergot., 2ozs., in water, and within ten minutes the hæmorrhage ceased and did not again return. The subsequent treatment consisted of syringing out the sheath daily with antiseptics, and smearing the parts with carbolised oil. Horse was ready to discharge a week after the operation; he remained, however, till June 24th. I heard nothing further until August 27th, when he returned for inspection, as he did not micturate freely. Upon examination, I noticed a constant dribbling of urine, and upon manipulation it was palpable the opening of the

prepuce was so contracted as to admit only of a probe. I had the animal cast and inserted a director, which I ran along a probe pointed bistoury, and slit the parts open. The horse left my premises to all appearances relieved, and I do not care if I never see him again.

A Case of Recurrent Gastritis in a Horse, and its Sequel.

This most interesting case occurred to a chesnut horse, the property of the Lancashire and Yorkshire Railway Company. The first attack this animal had was about the middle of June, when he was noticed to be uneasy in the shafts, as if commencing with colic. The man in charge returned to the stables as quickly as possible, when the horse was at once put into what is known as the sick box. I was then telephoned for. Upon my arrival, and after examining the animal, I was most struck with the great amount of salivation; it was simply hanging in ropes from his mouth. The visible mucous membranes were injected, pulse and temperature almost normal, general uneasiness, walking round the box, occasionally scraping, pupils dilated. Administered a little oil lini. and chlorodyne, and in a short time the horse recovered, and was all right next day. All went well for about three weeks, when he had a similar attack, and being away from home my assistant had it in hand. This attack I did not see, and I did not know anything about it until a fortnight later.

June 23rd, 9.30 a.m.—I was again summoned to attend, and upon entering the box, and seeing I had the same symptoms presented, only of a much more aggravated character, I at once inquired of the horse-keeper if this was not the same animal I had under hand five weeks previously, when he informed me it was, and that my assistant had it under hand a fortnight before, when I was away. I had exactly the same symptoms as before, only more severe, the horse having a sad expression of the eye, as if suffering acutely. Pulse and temperature normal, walking round box, lay down and screamed like a child. I then noticed him try to vomit, and again he screamed, and saliva flowed from his mouth. I now had my suspicions aroused as to poisoning. I had the driver sent for, and questioned him closely, but all to no purpose. He protested he had given the horse nothing, but wanted to lay the blame on the beans. I administered oil lini 1 pint, combined with chlorodyne 1 oz. and soda bicarb. 3 grs,, and hypodermic injection morphia ten minims. 12.30 a.m.—Horse easier, and administered ball containing ammon. carb. and belladonna. 5 p.m.—Much about the same. 9.30 p.m.—Easy and apparently free from pain. Saliva still in abundance, bowels torpid. Gave enema of glycerine and warm water, and left for the night in charge of the men, with instructions to call me up if the animal should become restless. It was not until 9 o'clock the following morning when a message arrived. "Come at once; horse worse." Upon arrival, I found the animal walking round box, no salivation, cold sweats bedewed the body, haggard expression of eye, pupils dilated; pulse 84, temperature 101. Administered ol. sed. med. as before, and morphia hypodermically. I paid five visits during the day. The last visit (8 p.m.) it was very palpable the end was fast approaching, death taking place about 9 p.m., one hour later. The following morning (9 a.m.) I made a *post-mortem* examination, which revealed extensive rupture of the stomach, the mucous membrane being highly inflamed and ulcerated throughout, some ulcers having eaten nearly through the coats of the stomach, and one or two large ulcers in the act of cicatrisation, these latter probably produced by the former attacks. Kidneys also very badly diseased. I was not at all satisfied about this case, for judging by the symptoms, the profuse salivation, and all other things combined, I was afraid there had been some foul play, and consequently had the stomach and some of the ingesta sent to the laboratory of the Royal Veterinary College to be examined and analysed,

with negative results. I satisfied myself, however, on a point which would otherwise have always had a taint of suspicion.

The third and last case which I have to retail is one of ascites in the dog, due to rupture of the bladder. It was one evening, about a fortnight ago, I was requested to go and see a dog. Upon arrival and making inquiries, the owner informed me the dog had not been well for a day or two, and that he had not seen it micturate. After this history I proceeded to the yard where the dog was in his kennel. I had him brought out, when it was noticed that he had an enormous dropsical-looking abdomen, which, on palpation, was easy to diagnose as one of ascites. There was no yellowness of the visible mucous membranes, such as you often see in such cases. The dog seemed to be in a very weak state, and could not manage to enter his kennel without assistance. I told the owner it was a hopeless case, and that he would probably die during the night, and, if so, I would gladly make a *post-mortem* examination the following morning, with the result that we found about a gallon of fluid in the abdominal cavity, and the bladder revealed a large rent, as you see in the specimen produced. The owner now asked me if I thought a kick would cause such a thing to occur, and I answered in the affirmative, particularly if directed to the flank, and the bladder at the time distended. It was then that he owned to having kicked the poor brute about two days before my seeing it.

Thanking you, gentlemen, for your attentive hearing.

Mr. FAULKNER brought forward a case of gall stones with cirrhosis of the liver in the horse. (See VETERINARY JOURNAL for July, page 85.)

Mr. WOODS proposed a vote of thanks to the President, Messrs. Jackson and Chorlton, for their very interesting cases. Mr. WOLSTENHOLME seconded, and Mr. TAYLOR supported.

In connection with the letter from the Southern Counties Veterinary Medical Association, Mr. HOPKIN remarked that it was a subject to be dealt with by the Council of the Royal College, when a fitting opportunity occurred.

Mr. E. FAULKNER said the matter had been twice before the Council, who considered that these occasions were inopportune for them to move with respect to exempting veterinary surgeons from serving on juries, but in the meantime it was desirable for associations and members to influence Members of Parliament in order that when opportunity arose they might be posted up and the opportunity seized by the Council for pushing the matter.

Mr. TAYLOR proposed that the Association request the Council of the Royal College of Veterinary Surgeons to take steps when a favourable opportunity occurred to obtain by Act of Parliament, or otherwise, the exemption of veterinary surgeons from serving upon juries, also for the revision of fees now paid to veterinary surgeons when giving evidence in criminal cases, so that they may be placed on a similar footing to solicitors and medical men. He also moved that the secretary acknowledge receipt of the letter, and thank the secretary of the Southern Counties Veterinary Medical Association for having drawn the Association's attention to the matter.

Mr. HOPKIN seconded the proposition, which was carried unanimously.

A MEDICAL DISCOVERY—FRANKFORT-ON-MAINE.—In connection with the Congress of German Natural Physicists, a meeting of medical men was held recently, when Dr. Rosenberg, of Berlin, gave an exposition of the new method of preserving articles of food, discussing also the questions of disinfection and sterility, and the treatment of infectious diseases, particularly tuberculosis by means of formaldehyd in hitherto unknown solutions, namely Holzin, Holzinol, and Sterisol. In the debate which followed, three speakers, who had also made experiments with these preparations, uttered a warning against optimism regarding their efficacy.—*Reuter.*

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending September 19th, 1896.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	——
None	Outbreaks confirmed 320 Slaughtered, diseased, or exposed to infection 6,502	Outbreaks reported 78 Animals reported during the four weeks attacked 113	Cases in dogs reported 14 Dogs destroyed, having been exposed to infection 18	Outbreaks reported 34 Animals attacked 58	

Glanders in London—55 outbreaks, 80 cases.

SCOTLAND.

None	Outbreaks confirmed 18 Slaughtered, diseased, or exposed to infection 377	Outbreaks reported 2 Animals attacked 4	None.	Outbreaks reported 5 Animals attacked 7	

IRELAND.

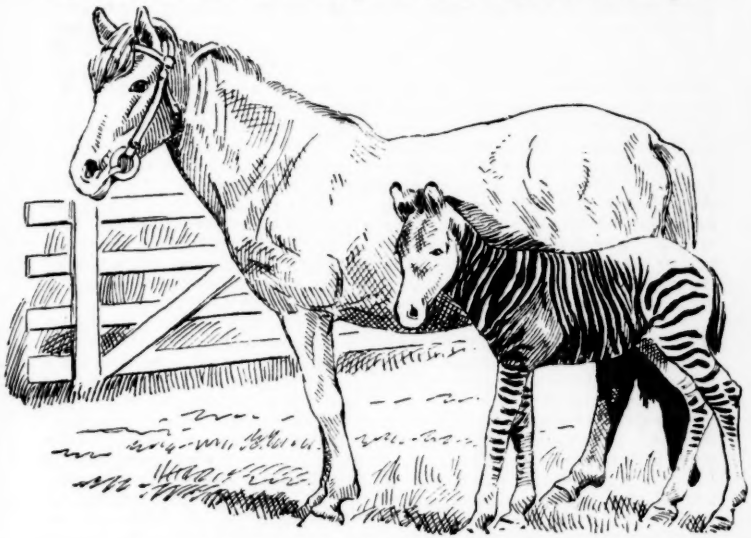
None	Outbreaks confirmed 53 Slaughtered diseased, or exposed to infection 240	Outbreak reported 1 Animal attacked 1	Cases in dogs reported 40 Other animals 10 Destroyed having been exposed to infection 22	None	

THE ANTI-TOXIN SERUM.—Vienna, September 7. An interesting report of its first year's work has just been issued by the Austrian State Institute for the preparation of anti-toxin serum. Of 1,100 cases of diphtheria treated with the serum, 97 per cent. recovered, a very favourable result compared with the previous mortality. When the remedy was applied on the first and second day of the illness, the percentage of deaths was 6·7. After the third day, however, the mortality reached 19 per cent., rising to 33 per cent. after the sixth day. Of 318 cases of preventive inoculation, only 20 were attacked by the disease, mostly in mild form, and all recovered.—*The Times.*

TELEGONY.

PROFESSOR COSSAR EWART, who so ably fills the Chair of Natural History in the Edinburgh University, has for some time past been pursuing a series of "telegony" experiments that have been attracting a large amount of attention in the scientific world; it being held that, leaving out of consideration the question whether acquired (that is, non-congenital) characters are transmitted, there is a problem that claims wider attention than it has hitherto received, and which is now known as "telegony."

As to the origin of his investigations, it seems that Professor Cossar Ewart was some time ago made the recipient of a foal's foot, showing an extra digit, the curiosity having been brought by a student from a farm near Edinburgh. The professor exhibited and gave his views regarding it at the last meeting of the British Association in Edinburgh. A certain number of the biologists



present gave it as their opinion that the extra digit had resulted from a splitting of the original middle digit; while others thought it might be due to reversion to an ancestral condition—that is, towards the three-toed ancestors of the horse. With the view, if possible, of throwing some light on the question involved, Professor Cossar Ewart collected and carefully examined horse embryos, with the result that, even in an embryo measuring fourteen inches in length, three complete digits were found for the first time. Two of the three were extremely minute, one corresponding to the forefinger and the other to the "ring" finger of the hand. At birth these two fingers were only represented by nodules of cartilage, while in the horse they form what are technically known as the "buttons" at the end of the splint bones.

In order to carry the inquiry into the development of the horse skeleton still further, it became necessary for the Professor to obtain a complete series of horse embryos from the early weeks onwards. To secure these,

elaborate arrangements were required to be made, which admitted of various other investigations being conducted simultaneously. The most interesting and important of these is connected with the problem of "telegony" (already referred to), it being held that "both naturalists and breeders are most anxious to ascertain whether what has frequently been termed 'the infection of the germ' is possible—whether there is any reason for the widespread belief that the first sire influences the after progeny obtained by subsequent sires."

So long ago as 1820 Lord Morton addressed the following communication to the President of the Royal Society:—"Some years ago I was desirous of trying the experiment of domesticating the quagga, and endeavoured to procure some individuals of that species. I obtained a male; but being disappointed of a female, I tried to breed from the male quagga and a young chestnut mare of seven-eighths Arabian blood, which had never been bred from. The result was the production of a female hybrid, now five years old, and bearing, both in her form and in her colour, very decided indications of her mixed origin. I subsequently parted with the seven-eighths Arabian mare to Sir Gore Ouseley, who has bred from her a very fine black Arabian horse. I yesterday morning examined the produce, namely, a two-year-old filly and a year-old colt. They have the character of the Arabian breed as decidedly as can be expected where fifteen-sixteenths of the blood are Arabian, and they are fine specimens of that breed; but, both in their colour and in the hair of their manes, they have a striking resemblance to the quagga. Their colour is bay, marked more or less like the quagga in a darker tint. Both are distinguished by the dark line along the ridge of the back, the dark stripes across the fore-hand, and the dark bars across the back part of the legs. The stripes across the fore-hand of the colt are confined to the withers, and to the part of the neck next to them. Those on the filly cover nearly the whole of the neck, and the back as far as the flanks. The colour of her coat on the neck adjoining to the mane is pale, and approaching to dun, rendering the stripes there more conspicuous than those on the colt. The same pale tint appears in a less degree on the rump; and in this circumstance of the dun tint also she resembles the quagga. The colt and filly were taken up from grass for my inspection, and, owing to the present state of their coats, I could not ascertain whether they bear any indications of the spots on the rump, the dark pasterns, or the narrow stripes on the forehead, with which the quagga is marked. They have no appearance of the dark line along the belly, or of the white tufts on the sides of the mane. Both their manes are black; that of the filly is short, stiff, and stands upright, and Sir Gore Ouseley's stud-groom alleged that it never was otherwise. That of the colt is long, but so stiff as to arch upwards and to hang clear of the sides of the neck, in which circumstance it resembles that of the hybrid. This is the more remarkable, as the manes of the Arabian breed hang lank, and closer to the neck than those of most others. The bars across the legs, both of the hybrid and of the colt and filly, are more strongly defined, and darker than those on the legs of the quagga, which are very slightly marked; and though the hybrid has several quagga marks, which the colt and filly have not, yet the most striking—namely, the stripes on the fore-hand—are fewer and less apparent than those on the colt and filly. These circumstances may appear singular, but I think you will agree with me that they are trifles compared with the extraordinary fact of so many striking features, which do not belong to the dam, being in two successive instances communicated through her to the progeny, not only of another sire, who also has them not, but of a sire belonging probably to another species, for such we have very strong reason for supposing the quagga to be."

Since Lord Morton's time it has, it appears, been almost universally

believed that it is possible that the first sire influences the after progeny obtained by subsequent sires. Recently Weismann wrote that "in spite of the additional cases brought forward by Spencer and Romanes, I do not consider that 'Telegony' has been proved." He further observed:—"I should accept a case like that of Lord Morton's mare as satisfactory evidence if it were quite certainly beyond doubt. But that is by no means the case." At the same time, while Weismann and his followers doubt the possibility of "the infection of the germ," dog fanciers and horse and cattle breeders not only generally believe in "telegony," but act up to that belief.

Prosecuting his investigations, Professor Cossar Ewart's object was to first of all get a number of mares to breed with the Burchell zebra, and then to breed the same mares with the horse of some well-known breed. Having procured some twenty mares, he experienced great difficulty in securing a suitable zebra sire. The professor, having been unsuccessful in getting one from South Africa, caused inquiries to be made on the Continent, when it was ascertained that at the time there were only three suitable animals in Europe. Of these he was fortunate in obtaining the one of which the above is a sketch. This Burchell zebra sire, which came from the Zoological Gardens of Antwerp, is about seven years old. Of a pale, yellowish-brown colour, with dark stripes, it is generally regarded as a perfect specimen of its kind, alike powerful and handsome, and admirably fitted for the experiments.

Following the arrival of the sire numerous difficulties were encountered in connection with the experiments, and, as already announced, only one foal has as yet been obtained. Above are sketches of the mother and her offspring. The former, named "Mulatto," lent by Lord Arthur Cecil, is a mare of that well-defined breed known as Island of Rum ponies, of a jet-black colour. The hybrid, which was born on the 12th of August last, is called "Romulus." It is an exceedingly pretty little creature, the stripes being fawn-coloured upon a background nearly black, and its action is graceful. Its presence in the experimental station at Penicuick has naturally attracted widespread interest, not only among scientists, but all classes.

Practically the difficulties referred to have been overcome, and it is expected that by another year there will be an increase in the number of hybrids. Should the next foal—as is said to have been the case with the second and third foals obtained from Lord Morton's mare—present stripes and other zebra characters, a problem of the utmost importance from a breeders' point of view, and of profound interest from a scientific standpoint, will have been solved. That is to say, it will have been proved that the first sire does influence the after progeny obtained by subsequent sires; or, in other words, that there is such a thing as "infection of the germ." It will then remain to be seen which of the various explanations that have been offered by Mr. Herbert Spencer and others is the most likely to account for this remarkable phenomenon. But even if the second foal has no zebra-like markings, it will not, it is contended, have been demonstrated that "telegony" does not occur. Sir Everett Millais, who has made extensive investigations on the same subject with dogs, believes that "telegony" does occur, though extremely rarely. It is possible, therefore, that although "Mulatto's" second foal does not settle the question, some of the foals of the other mares forming the stud may do so.

Apart altogether from the question of "telegony," the present hybrid is unquestionably of great interest. In the first place, it is far more "marked" than could ever have been anticipated, and, strange to say, in its "markings" it does not resemble either the extinct quagga, or any of the three existing zebras—the zebra of the plains (Burchell Zebra), or the two mountain zebras; and it will be for scientists to account, if they can, for this absence of agreement. It is all but universally admitted that the mule (the cross between the donkey and the mare) is sterile. There is no satisfactory record of mules

breeding either with each other or with any other member of the horse family. But the zebra so much more closely resembles the horse than the donkey, and the present hybrid is so much more like a horse than a mule, that it is quite possible the new hybrids may be fertile with each other; and if this proves to be the case, another race of horses will eventually be introduced. Further, the new hybrid may be fertile both with the donkey and the horse, and it is thought to be conceivable that it may even breed with a mule or hinny (the cross between the donkey and the pony mare.)

At all events, it has been demonstrated that a cross can be obtained between the male Burchell zebra and the mare, and, according to the greatest authority on mule breeding in England, this will prove the most valuable of all the possible crosses. It is, of course, just possible that a similar cross has been obtained before, but considering the very striking and remarkable appearance of the present hybrid it may also be taken for granted that had such a cross been secured it would have been put on record. So far, it seems, although wide inquiry has been made, no such record has been discovered.

Professor Cossar Ewart forwarded a communication to the *Scotsman* two or three years ago regarding the ravages of the tsetse fly, in which he tentatively suggested that a cross between the horse and the zebra might secure a breed which possibly might be able to withstand the bite of this destructive insect. He has since pointed out that what he originally suggested was that the preliminary experiments might be made in this country. The Cape Government were semi-officially invited to assist in the investigations, but hitherto they have not done anything. Now that it has been proved that a cross between the two animals is possible, the Professor considers that it should be for the authorities in South Africa to carry the matter further and settle by experiment whether or not the hybrid between the Burchell zebra and the mare is able to withstand the ravages of the fly in question. In any case, Professor Cossar Ewart's further experiments will be keenly followed by all interested in the subject.

TICK FEVER IN QUEENSLAND.

THE usual montly meeting of the Central Queensland Farmers' and Selectors' Association was held at Rockhampton on Saturday, August 1st, 1896. There were present: Messrs. J. O'Shanesy (president). M. Hogan, A. Klaproth, J. Davis, H. Johnson, E. Weisse, J. Barrett, D. Whiteley, C. Murray, W. Ellrott, A. Bloomfield, and T. Whiteley (hon. secretary).

Mr. A. W. BARNES, M.R.C.V.S., read the following paper on "Tick Fever":—

Stock-owners of this district are now anxiously wondering whether we are to be visited with as disastrous a plague of ticks as the northern parts of the colony. The cattle tick has been in this district since last December. Three months elapsed from the time we knew that cattle brought ticks from the west until it was reported to me that a bullock and a few cows were sick in the vicinity of Lake's creek. One bullock died. I had a cow which was ill killed, and a *post-mortem* examination upon both showed the characteristic appearance of tick fever; known by the Americans for over thirty years as Texas fever. Although examined carefully, not a tick was found on the cow or the bullock, and, not wishing to create an unnecessary alarm, I waited to see if ticks could be found before reporting that tick fever had occurred in this district. I should mention that the other cows which were ill recovered. In less than a fortnight from the time I made the *post-mortem* examinations, full-sized ticks were discovered on dairy cows and calves at Meadow Flats

and in the neighbourhood of Lake's Creek, What I wish particularly to direct attention to is the fact that, as far as I am aware, not a beast has died, or apparently suffered with tick fever, since the cases which I have mentioned. At intervals of a few weeks the cattle have been free from ticks, and then they would be noticed to be again covered with them. My not finding ticks upon the bullock and cow is explained by the statement made, I believe, by Mr. Pound and Dr. Hunt, that ticks may cause tick fever when they are so small that it is almost impossible to see them upon the cattle with the naked eye. It should be remembered that tick fever can be transmitted by injecting the blood of a diseased beast into a vein or under the skin of a healthy one. The Americans make this statement, and Dr. Hunt reports that he has succeeded in producing the disease in this way. The disease can also be produced by placing ticks hatched in a laboratory upon a healthy beast. I mention this to show that the disease and its virulence does not depend upon the number of ticks there are upon an animal. Dr. Hunt says in his report that the supposed organism found in the blood of tick-infested cattle "is derived from and part of the proper organisation of the tick itself." It seems to me coutrary to the laws of nature that the tick should liberate a part of its own structure and can become a parasite or act as one, and multiply in the blood of cattle. Whether tick fever follows the attack of ticks appears to me to depend upon whether the organism, the actual cause of the disease, has arrived at a certain stage of development. It is possible that the disease does not depend upon the organism developing to a more virulent stage in a higher temperature, but upon the blood being changed to a condition which prevented it resisting its attack. When an animal has a temperature above normal the condition of its blood is altered. In one drop of blood of a tick-infested beast these organisms, with the assistance of the microscope, can be seen in great numbers. It is much easier, I think, to accept the theory that these organisms are parasites of the ticks and pass from the tick to the egg, and, like the larvæ form of the tick itself, simply waiting for a suitable host, which it finds when the tick gets upon cattle. Mr. Pound found in the blood of a tick-infested calf, which he killed and whose organs appeared perfectly healthy, the organism which is supposed to cause tick fever. It is said that this organism can be found in the blood of every beast which has or has had ticks upon it. The American investigators inform us that it is the second generation of ticks which produces the disease. Since I first noticed the ticks near Lake's Creek and at Meadow Flats, the cattle must now have had more than one generation upon them. They have several times been clear of ticks, only to be re-infested, so the American experiences do not seem to coincide with ours. The question is, What conditions or circumstances can be protecting the cattle of this district from tick fever? We have no authentic knowlege that these ticks have ever been seen in this neighbourhood before, so cattle could not have acquired immunity by previous attacks. It is not because the organism is absent from the blood. Mr. Pound demonstrated its presence a few weeks ago, and I have found it since on several occasions. The only explanation I can suggest is that our climate is similar to the Texas climate, where they have a quiescent period, and that when the weather becomes warmer the ticks will become more numerous, and then we may expect the disease to appear. Although our winter has not been severe enough to destroy the tick, I believe it prevents the parasites from arriving at the stage of development when it becomes virulent. If a high temperature is necessary before the organism can arrive at this stage or become active enough to cause disease by destroying the red blood corpuscles, there seems a possibility of its being cultivated in a high temperature, in

a suitable media, and a chance of a protective vaccine being obtained, though no one has succeeded in doing it yet. No doubt, when the ticks are in great numbers upon the cattle the disease is most likely to recur, not because the organisms in the blood are more numerous, but because the irritation caused by the ticks raises tho temperature of the cattle. The fact that the disease can be produced by injecting blood from a diseased beast shows that it does not depend entirely upon the number of parasites present in the blood. It is noticed that in cattle which are exposed to a very hot sun, travelled too far or too fast, or knocked about, the disease more frequently makes its appearance, a fact I would account for by animals becoming heated and the temperature raised. Fat cattle would, I think, be very likely to become affected as their temperature is easily increased. The experiment of injecting the blood of diseased animals into the veins of a healthy one and so producing the disease, does not prove that it is not necessary to have a high temperature before the disease may appear. The operation of injecting anything into a vein is quite sufficient to raise the temperature of cattle. The temperature of cattle is raised more quickly than that of any other animal. Veterinary surgeons know that even shouting at cows in a byre will raise their temperature. So I conclude that to perform this operation in warm weather is quite sufficient to produce a suitable condition for the development of the disease. There is no doubt that long grass gives cover to the ticks and eggs, and the fact is worth noticing, that the place where ticks first appeared on Lake's Creek Road, after the cattle which brought the ticks passed, was in a small paddock, where the grass was allowed to grow long for hay. Dr. Salmon, chief of the American Bureau of Animal Industry, says, "Ticks do not travel very far, and we have found that a wide street separating the pens for infected cattle and healthy cattle, is sufficient to prevent the disease being contracted?" A remarkable instance proving the truth of this statement has occurred on the Lake's Creek Road, where the railway line separates the road from a small paddock. I found cattle straying about the road covered with ticks, and the cattle in the paddocks where they had been for several months quite free from ticks. It is not twenty yards from the road to the paddock across the railway. Whether the ticks mature on horses, animals, and birds, sufficiently to lay fertile eggs, I do not know. Rain, unfortunately, does not kill the ticks or eggs, as we had our wet season and floods some time after the ticks came to this district. It is quite evident our cold weather is not going to kill them. Ticks' eggs kept in a sealed bottle are now hatching, and ticks are at present laying eggs. American experience goes to prove that one attack of tick fever does not insure immunity from another attack, although it is probable that repeated attacks will eventually give immunity. I think by allowing the cattle access at all times to common salt, might assist in preventing the disease. Tick, like leeches, do not thrive where salt is. Sulphur might also prove valuable. The advice given by the Rockhampton *Bulletin* to dairymen to watch their cattle closely and oil them carefully when they see ticks, cannot be improved upon at present. When I say carefully I mean see that every portion of the animal is covered with oil. Remember that it is no use oiling only portions of the cattle, the young tick is not larger than a grain of sand, and may be on in thousands, although not visible. They can grow from this size to the size of a pea in forty-eight hours. I notice that in the urine these organisms are particularly numerous and active. Is there any possibility of the disease being propagated by being picked up on the grass, and for cattle to become inoculated in this way? Has the organism completed the cycle of its life when it reaches the ground in the urine? is that the end of its existence? I venture to remark that this organism, as it is seen in the blood and urine of cattle, is remarkably like the development of the different stages of spirillum, with its round motionless bodies, the zooglea stage

and spores with the filamentous and mobile stage. Several of the stages mentioned may be seen in the blood of cattle with ticks upon them. A great difficulty in checking the spread of ticks is the indifference with which some people look upon the trouble. As an instance of this, two days before I noticed a horse covered with ticks on the north side of the river, and I offered the owner some fluid to dress the horse with. He replied that if I wanted the horse dressed I would have to buy the horse. Burning the grass or keeping it well eaten down would assist in checking the plague.

The CHAIRMAN said the paper was a most interesting one to the farmers of the district. All he could say was that he hoped they would reconcile themselves to the proposal made to them to stamp out the tick fever. He had every pleasure in moving a vote of thanks to Mr. Barnes for reading the paper.

Mr. HOGAN said it came to his knowledge from a gentleman in the north that the ticks were very bad up there, as they all knew they were. This gentleman said it was no earthly use in trying to keep the ticks away by quarantining cattle, because the birds of the air, and animals such as horses and kangaroos, carried ticks about. He asked if that had come under the notice of Mr. Barnes?

Mr. BARNES: That is referred to in my paper. I mention that I am not aware that ticks can mature upon horses, birds, or other animals.

Mr. HOGAN: Would you consider it necessary to carry out stringent rules of quarantine to keep cattle from going with each other while horses are allowed to stray about distributing the pest?

Mr. BARNES: I can only say I have no proof that ticks grow to a fertile stage on horses or birds. That is all I can say on the matter. It may be known to others, but I do not know if a tick that falls from a horse can lay eggs that are fertile. It is a matter we should know as soon as possible. I have not had an opportunity of getting any matured ticks. I have one or two good-sized ticks that I took off horses, but they have not laid eggs. Perhaps the authorities down below may be able to give us some information on the matter.

Mr. D. WHITELEY: Do you know when these cattle came into Lake's Creek paddock originally?

Mr. BARNES: In December.

Mr. D. WHITELEY: I would like to ask if sulphur is of any use to give to the cattle?

Mr. BARNES. I mentioned in my paper that it is. Any sort of sulphur will do.

Mr. WHITELEY: Is there any danger from using too much sulphur? If I were going to use it I would use it in my feed as I hand feed most of my cattle.

Mr. BARNES: The best way would be to give not more than ½ oz. of sulphur to a beast or 1 oz. of salt.

Mr. D. WHITELEY: How often?

Mr. BARNES: I would not advise more than three times a week. What I would advise people to do would be to put it in a trough where they could get at it. Allow them to eat the salt, and I think they would take the sulphur with it.

Mr. D. WHITELEY: I would like to know if ticks are likely to interfere with the growing crops? If we are to keep burning down our grass we should have no hay, and we would be in a bad way.

Mr. BARNES: No doubt they would get amongst the crops. Perhaps you have not seen the larvæ from the tick.

Mr. D. WHITELEY: No.

Mr. BARNES: I saw them in Mr. Niall's office. About the 20th of April they laid their eggs in this bottle, and they hatched in thousands, being smaller than a grain of sand.

Mr. D. WHITELEY: Would stirring the soil do any good? If we have always to burn the grass it is a bad look out.

Mr. BARNES: In Meadow Flats the grass is fairly well eaten down, but there is a fringe of grass on the outside, and that is the sort of place where ticks would lay their eggs and hatch them. If you have such a place the best thing you can do is to burn it down. The cattle will not eat that sort of grass, as it is too coarse. When the flood came, they just washed the ticks on to this fringe of grass.

Mr. HOGAN: Is there any possible chance of ticks being protected by the long grass if birds wanted to eat them?

Mr. BARNES: Quite likely. My fowls ate ticks when I brought them home, but the fowls are not numerous enough, as these ticks are in millions.

Mr. D. WHITELEY: We have had some hot weather since December, so I do not see how your explanation follows with regard to this.

Mr. BARNES: But it takes forty days for the eggs to hatch, and that would carry them over the hot weather.

The PRESIDENT: Are the eggs hatched in the soil or in the herbage?

Mr. BARNES: I think mostly on the soil, but they will hatch anywhere where the temperature is suitable. They will hatch in a glass bottle where there is no air at all. They will more readily hatch under a cover in from twenty to forty days.

Mr. HOGAN: They never hatch on beasts?

Mr. BARNES: Never. They lay only on beasts. Ticks never go from one beast to another. It is only the young ones on the ground that swarm on to the beasts. They never leave a beast until they mature and fall off, not even if another beast comes in contact with it.

Mr. T. WHITELEY: Mr. Pound told us he was going to Ingham to see how long the oil had effect after it was put on. Have you any information on that point?

Mr. BARNES: Some ticks were found alive on beasts five days afterwards. I dipped a tick into cotton seed oil myself and next morning it was alive. I think they are dipped in oil which floats on water, but I do not think that is always effective, because when a beast goes in it will throw the oil on one side and its skin will get wet before the oil touches it.

Mr. ELLROTT: That was my opinion.

Mr. D. WHITELEY: That is very feasible.

Mr. D. BARNES: If we could get oil and water that would mix and become one article it would be more efficacious.

Mr. HOGAN: Would it do to rub oil on quiet dairy cattle?

Mr. BARNES: Yes, it would do, but it is a hard job. I tried it myself, and found it a lengthy process. It is all right for dairymen with a few cattle.

Mr. JOHNSON: Did you ever try kerosene?

Mr. BARNES: No, but I put ticks in kerosene and they lived a long time.

Mr. D. WHITELEY: They must have strong constitutions.

The PRESIDENT: Do you think the burning of grass in the infected districts would help us to destroy the nest?

Mr. BARNES: I do. I mentioned that in my paper.

Mr. HOGAN: But does burning the grass always prove effective?

Mr. BARNES: I have heard it reported that ticks go a foot under the soil.

Mr. ELLROTT: I doubt that.

Mr. HOGAN: If that is true, then it is nothing but a plague that has come amongst us.

Mr. D. WHITELEY asked if Mr. Barnes had experimented with any other oils?

Mr. BARNES said the disinfectant fluids would do just as well, only they were too expensive.

Mr. HOGAN: Have you ever tried a tobacco wash?
Mr. BARNES: No.
Mr. HOGAN: I should think that would be effective.
Mr. T. WHITELEY asked if spraying the oil on to the beasts would do?
Mr. BARNES said spraying would do if oil could be sprayed, which he doubted.
Mr. D. WHITELEY: In spraying two-thirds of the material is wasted.
Mr. BARNES: I do not think so, not if the nozzle is close.
Mr. T. WHITELEY said he would second the President's motion, which was put and carried.

Army Veterinary Department.

Veterinary-Captain E. H. Kelly arrived on the 31st August on sick leave of absence from South Africa.

Moves in September.

Veterinary-Captain F. Raymond and A. F. Appleton and Veterinary-Lieut. W. J. Tatam embark for India on the 11th inst.

Veterinary-Lieut. R. H. Holmes arrived at Aldershot from Okehampton on the 5th inst.

Veterinary-Lieut. A. C. Newsom arrived at Edinburgh for duty with the 6th Dragoons on the 8th inst.

Veterinary-Major W. Gladstone left Hounslow, on the embarkation for India of 4th Hussars, for Dundalk, for duty with 1st Dragoons.

Veterinary-Captain C. E. Nuthall has been transferred from 1st Dragoons, Dundalk, to 2nd Dragoon Guards, Shorncliffe.

Veterinary-Lieutenant J. T. Coley has joined at Newbridge from Aldershot, for duty with Royal Horse Artillery.

Veterinary-Captain R. Pringle accompanied the 2nd Dragoons from Aldershot to Hounslow, and proceeded with the escort of that regiment for Leith, sent in honour of the Czar of Russia.

The following officers embarked in s.s. "Victoria" for a tour of service in India:—Veterinary-Captain R. H. Ringe, Veterinary-Captain G. C. O. Fowler, Veterinary-Lieutenant F. W. Hunt. Veterinary-Lieutenants C. B. M. Harris and F. S. H. Baldrey also embarked on return to India from sick leave of absence.

Notes and News.

At the Glasgow Health Congress, which met there during the latter part of July, Professor William Ramsay, of "Argon" fame, delivered the address as President of the Chemistry and Engineering Section. Everyone was aware, he said, that exposure to the open air during summer weather was accompanied by an effect, generally acknowledged as a sign of health. They noticed, at once, in our boys and girls and men and women after the summer holidays a ruddy complexion, and a brown colour—a sunburn as we called it. That brown colour was probably due to the effort of the surface cells of the skin to protect themselves by secreting a pigment capable of absorbing the violet and ultra-violet rays of the solar light, and the "peeling" which accompanied severe sunburn was merely the shedding of such dead cells. That common phenomenon was an instance of the effect of light generally on minute organisms. It was worth mentioning, in passing, that the Röntgen rays were

particularly apt to cause the worst kind of sunburn; so much so, that one of his friends, who had been in the habit of exhibiting the bones of his left hand freely to admiring spectators, had, in consequence, shed all the finger-nails of that hand—an effect by no means without pain and discomfort. These light rays, some visible, some invisible, which produced the effect of sunburn on the human skin, destroying its surface cells, had a similar action on all simple organisms. That action had been the subject of investigation, from the bacteriological side, by Professor Marshall Ward, of Cambridge; and from the chemical side, by Dr. Arthur Richardson, of Bristol. The result of Professor Ward's investigations was that "they stood face to face with the fact that by far the most potent factor in the purification of the air and rivers of bacteria is the sunlight." The experiments proved that blue and violet light killed germs and spores. It was true that his experiments related chiefly to spores of one kind of disease—anthrax. Still, a sufficient number of others had been tried to show that they, too, would succumb to sunlight, and special experiments on the typhus bacillus had shown that it was also destroyed by light. It might also be taken as proved that the action of violet light on moist organic matter in many cases, if not all, led to the formation of peroxide of hydrogen; that peroxide passed on a portion of its hydrogen to the organic matter, itself becoming water, and destroying or changing the organic matter; that such changes were destructive to the life of the minute organisms which teemed in our rivers, and generally to animal life; and that among such organisms were to be reckoned those which produced typhus fever and orthrax, and probably also cholera; and although direct experiments on the subject had yet to be made, it was extremely probable that most zymotic diseases would be prevented were it possible to expose the source of infection to sunlight in the presence of moisture. It became, therefore, of the utmost importance to our health to admit to our houses as much sunlight as possible.

Extracts from Foreign Journals.

ON THE CAUSES OF HORSE-SICKNESS IN AFRICA.

Surgeon Schöbert writes as follows to the *Berliner Thierärzt. Wochensch*: – "I have followed, with great interest, the reports of horse-sickness in Africa, and have become more and more impressed with certain beliefs which, in view of the magnitude of the calamity, I venture to place before you, in the hope that they may bring about a discussion. In my practice I have a good deal to do with fungus-poisoning. *Polythrincium trifolii* grows luxuriantly on clover, especially on the flowers; it is found also amongst hay, especially Lucerne hay, and is said by Fröhner to cause embolism and corrosion of the blood-vessels in horses and ruminants. At any rate, we can now refer to their proper cause the great variety of symptoms produced in animals poisoned with this fungus: these are flatulence, paralysis of the intestines, delayed defecation, very painful colic, hæmorrhagic inflammation of the intestines, œdema of the lungs, swelling of the spleen, wide-spread hæmorrhage under the skin, about the heart, in the larynx and in the air-passages. This fungus-sickness has great similarity to splenic fever, and has a distinct resemblance to the South African plague, so far as we can judge from the reports that have reached us. Perhaps, therefore, it would be better to turn investigation of the causes thereof not so much in the direction of infectious diseases as of those proceeding from defective fodder, and to keep specially in mind the possibility of fungus-poisoning. I may add that in such cases of poisoning I administer, generally with success, antifebrine in pills of 5 to 10 grammes (1

gramme=15½ grains) every two hours, but not more than six pills in a day, and this for not more than two days; also ½ per cent Creolin water-emulsion, one bottleful every hour or so till recovery."

NEW REGULATING ABSCESS LANCET.

THIS instrument consists of a director and a concealed knife, and made to open scissor fashion. The director is drawn out to a point for making the puncture and the blade shaped somewhat like the concealed knife of a Bistoury-cache for making the incision.

The instrument will go in an ordinary pocket-case.

In opening an abscess in the region of the parotid and submaxillary glands, sometimes, owing to the excitable nature of equine patients, a large and even dangerous incision is made; with this lancet such an accident is impossible, owing to its construction.

MESSRS. ARNOLD & SONS, West Smithfield, London, are the Makers.

Daventry. P. MAXWELL EDGAR, M.R.C.V.S.

Correspondence.

Principal WILLIAMS, F.R.S.E., F.R.C.V.S., New Veterinary College, Edinboro'. Rockhampton, Queensland, Australia.

DEAR SIR,—I enclose a cutting from a paper containing a paper I read here recently. As usual, medical men are "jumping our claim" in this part of the world. Dr. Hunt has been sent to America to enquire into the American methods of combating the tick plague which causes Texas Fever. It is remarkable how his investigations and experiments confirm the experience of the Americans as described in your report on Texas Fever in THE VETERINARY JOURNAL of August, 1895. I should consider myself greatly privileged if you can find time to send me a few lines suggesting any experiment I might try to find a virus which would protect cattle.

It seems fairly well proved that this disease is due to a micro-protozoa which attacks the red blood corpuscles.

If you think the organism would live in a capillary tube, long enough to reach you, I would send it on. I am not able at present to experiment, owing to cattle here not suffering from "Tick Fever or Red Water," as we call it here. The cattle are covered in ticks, and except that they are not in very good condition, they do not appear to be suffering from the attack; but further north in the tropics, they have been dying in great numbers, and so I expect they will do here when the summer comes. I will send you a piece of hide in a salt solution (which I find keeps the ticks best, and they retain their natural colour in salt. In alcohol they go black even if diluted). You will notice the *small* male tick underneath the female, close to its head, but attached to the skin. I shall be glad to answer any questions on this subject.

There is a lot to be done in investigating this disease. Unfortunately, I cannot devote my whole time to it. I am the meat inspector at Lake's Creek. —I remain, dear sir, yours respectfully,

A. W. BARNES, M.R.C.V.S.

[The paper above referred to is published in another part of this issue.—ED., VETERINARY JOURNAL.]

Obituary.

A NOTED VETERINARIAN.

DR. JOHN WESLEY GADSDEN, whose death, at the age of 64, occurred at his home, 2,109, Arch Street, was one of the best known veterinarians in America. He was an Englishman by birth, but for nearly thirty years past he had been a resident of this city, and earned an enviable reputation here and in other parts of the country.

Dr. John W. Gadsden commenced the study of veterinary medicine on January 1, 1856, entering the Royal College of Veterinary Surgeons, from which he graduated on April 30th, 1858.

His early work

Dr. Gadsden was first engaged as assistant by William T. Stanley, who had a large practice in Leamington, Warwickshire, with whom he remained about a year, when he purchased a practice for himself at Bracknell, in Berkshire. He remained there until the fall of 1867, acquiring an extensive practice, and also serving, by appointment of the English Government, as Veterinary Inspector. He then came to the United States, and located in Philadelphia in January, 1868.

Did effective service.

He was appointed veterinary inspector by the Department of Agriculture, and did most effective work, always co-operating with the State authorities. At the time when so many cattle in Chicago were sick in the distilling sheds Dr. Gadsden concluded, from his observations, that the infection could only be caused by the living diseased animal, and advised the owners that they were perfectly safe in putting fresh cattle in the stalls, after killing the others and disinfecting the place. Prominent veterinarians of Europe, with whom he communicated on the subject, expressed a similar opinion.

His efforts in this direction brought him into prominence and he was called, as an expert, before a committee of the United States Senate on matters relating to the veterinary profession. For several years he acted as examiner in the Veterinary College at Montreal. He retired from active practice in 1891, but retained his interest in veterinary matters up to the time of his death.—*Philadelphia Inquirer.*

J. T. Jones, Oswestry, Salop..	March,	1880.
W. A. Harber, late Kidderminster	June,	1846.
T. W. Dinwoodie, Dumfriesshire	April,	1887.

Communications, Books, Journals, etc., Received.

Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétériniare (Brussels); Berliner Thierärztliche Wochenschrift (Berlin): La Clinica Veterinaria Milan); Il Nuovo Ercolani Pisa); La Revista Veterinaria (Buenos Aires), La Gaceta Médica de Costa Rica; The Veterinary Magazine, "Die Behandlung der Lungentuberculose mittels Ichthyol," by Dr. M. Cohn (Leipzig: G. Thieme); "De l'emploi de l'Ichthyol dans le traitement de la Tuberculose Pulmonaire," by Dr. M. Tanneur, etc., etc.